2002

MITSUBISHI

Service Manual

VIDEO CASSETTE RECORDER

S-VHS

MODEL

HS-U748

Only cassettes marked S-VHS or VHS can be used with this video cassette recorder.

SPECIFICATIONS

Tape Format	:	S-VHS/VHS 1/2" high-density video cassette tape
Power Source	:	120 V AC ; 60 Hz
Power Consumption	:	Approx. 21 W (standby 2.9 W)
Video Signal System	:	EIA standard ; NTSC color
Video Recording System	:	S-VHS standard
Luminance	:	Frequency modulation recording
Color Signal	:	Low frequency conversion sub-carrier phase shift recording
Hi-Fi Audio Recording System	:	VHS standard Azimuth helical scanning system
Linear Audio Track	:	1 track
Tape Speed	:	1-5/16 i.p.s (standard play) 7/16 i.p.s (extended play)
Maximum Recording	:	120 min. with T-120 video cassette (SP mode) 360 min. with T-120 video cassette (EP mode)
Heads: Video	:	4 rotary heads
Hi-Fi Audio	:	2 rotary heads
Audio/Control	:	1 stationary head
Erase	:	1 full track head

Video Input	:	0.5 to 2.0 V(p-p), 75 Ω unbalanced RCA pin Jack
Audio Input	:	346 mV(rms), 47 kΩ unbalanced RCA pin Jack
Video Output	:	1.0 V(p-p), 75 Ω unbalanced RCA pin Jack
Audio Output	:	346 mV(rms), 1 kΩ unbalanced RCA pin Jack
Tuner VHF	:	54 to 88 MHz, 174 to 216 MHz
UHF	:	470 to 806 MHz
CATV	:	54 to 88 MHz, 90 to 804 MHz
Operating Temperature	:	41 °F to 104 °F
Relative Humidity	:	30 % to 80 %
RF Channel Output	:	Channel 3 or 4 switchable
Weight	:	Approx. 8.0 lbs (3.6 kg)
Dimensions	:	16.7"(W) × 3.7"(H) × 11.9"(D)
Timer Program Capacity	:	1 month programmable / 8 programs
Deck	:	α Deck

• Weight and dimensions shown are approximate.
• Design and specifications are subject to change without notice.

MITSUBISHI DIGITAL ELECTRONICS AMERICA, INC.

9351 Jeronimo Ave. Irvine, California 92618 U.S.A.

Copyright © 2002 Mitsubishi Digital Electronics America, Inc. All Rights Reserved.

CONTENTS

– FILE “COVERPGE” –
SPECIFICATIONS 1
CONTENTS.....2
GLOSSARY OF ABBREVIATIONS 4

– FILE “DISASSY” –
SAFETY PRECAUTIONS.....1
CONNECTION 3
DISASSEMBLY 4
HOW TO EXECUTE CIRCUIT BOARD SERVICE.....7
CHIP PARTS REPLACEMENT 9

– FILE “ELCTADJ” –
HOW TO INITIALIZE THE E²PROM 1
WHEN REPLACING IC5A0 1
ELECTRICAL ADJUSTMENTS.....1
Servo circuit Adjustment.....2

– FILE “MECHAADJ” –
MECHANICAL ADJUSTMENT
AND REPLACEMENT 1
1. DECK Cleaning.....1
1-1 VIDEO HEAD 1
1-2 Tape Running System.....1
1-3 REEL DISK Drive System 1

2. Replacement of Major Parts 2
2-1 CLEANING ARM, FELT RING 2
2-2 STAY PLATE.....2
2-3 BOTTOM ASSY.....3
2-4 INSERT GUIDE (TU).....4
2-5 INSERT GUIDE (SP).....4
2-6 REC HOLDER, REC LEVER, REC SPRING 5
2-7 F/L ARM ASSY, F/L BEARING 5
2-8 A/C HEAD UNIT 6
2-9 F/E HEAD.....6
2-10 SENSOR COVER (TU) 7
2-11 SENSOR COVER (SP) 7
2-12 REV UNIT (TU),REV UNIT (SP).....8
2-13 MODE POSITION UNIT 8
2-14 REEL BELT, PULLEY BUSH, THRUST WASHER, BELT PULLEY, SHIFT SLIDER, PULLEY GEAR ASSY, SLIP GEAR, SLIP SPRING, SLIP2 WASHER, THRUST WASHER, SLIP ADJUSTER, IDLER2 UNIT 9
2-15 CAPSTAN BRAKE SPRING, CAPSTAN BRAKE ASSY 11
2-16 FC HOLDER, MOTOR HOLDER, LOADING WORM, LOADING MOTOR ASSY, WORM WHEEL.....12
2-17 PINCH ARM CAP, PINCH ASSY.....13
2-18 F/L PLATE, DOOR ARM.....13
2-19 BRAKE CAM PLATE.....14
2-20 GUIDE LAMP 15
2-21 MAIN CAM, GUIDE ARM (TU), BRAKE LEVER, LB PIN.....16
2-22 L/D LOCK LEVER.....17
2-23 BRAKE BELT (SP), BELT HOLDER.....17
2-24 BELT LEVER, BELT ADJUSTER 18
2-25 TENSION ARM, TENSION LEVER, TENSION SPRING, TENS AXIS HOLDER, REEL DISK (SP side).....18
2-26 BRAKE BELT (TU).....19
2-27 BRAKE (TU), REEL DISK (TU side) 19
2-28 SHIFT LEVER.....20
2-29 CHARGE SPRING, SWING LEVER, CHARGE ASSY 21
2-30 LOADING ARM ASSY (SP), LOADING ARM ASSY (TU) 21
2-31 A/L LEVER.....22
2-32 TAPE GUIDE ASSY (SP), TAPE GUIDE ASSY (TU).....24
2-33 DRUM CLAMPER, DRUM ASSY.....25
2-34 DRUM MOTOR STATOR, BRUSH SPRING, SPACER, ROTOR CASE, END RING, BRUSH, UPPER DRUM ASSY.....26
2-35 CAPSTAN MOTOR.....27
2-36 IMPEDANCE UNIT (SP), FLYWHEEL (SP).....29
2-37 SSW HOLDER, SSW SLIDER.....29

3. Interchangeability Adjustment of the Mechanism.....30
3-1 Adjustment of BACK TENSION and TENSION POLE's Position 30
3-2 Check and Adjustment of FM Envelope 31

CONTENTS

3-2-1 GUIDE ROLLER Adjustment Check 31
3-2-2 Height Adjustment of GUIDE ROLLER (SP) 31
3-2-3 Height Adjustment of GUIDE ROLLER (TU) 31
3-2-4 Coarse Adjustment of Phase 32
3-2-5 Flatness Check of FM Waveform.....32
3-2-6 Tape Running Condition at the GUIDE ROLLERs (Check1) 33
3-2-7 Tape Running Condition at the GUIDE ROLLERs (Check 2) 33
3-3 A/C HEAD Adjustment 34
3-3-1 Slant Adjustment of A/C HEAD 34
3-3-2 Azimuth and Height Adjustment of A/C HEAD 34
3-4 Phase Adjustment.....35
3-5 Tape wrinkle check 35
4. Servicing for Tape Jam during the Loading Process 36

SERVICE CAN BE EXECUTED WITH THE EE PICTURE DISPLAYED.....37
DECK OPERATION CHECK.....37

– FILE “PARTSLST” –
PARTS LIST 1
1. CABINET ASSEMBLY.....1
2. PACKING PARTS.....3
3. ELECTRICAL PARTS.....5

– FILE “DECKASSY” –
DECK ASSEMBLY-1.....1
DECK ASSEMBLY-1 P/L 2
DECK ASSEMBLY-2.....4
DECK ASSEMBLY-2 P/L 5

– FILE “SCHEMATC” –
BLOCK DIAGRAMS
SCHEMATIC DIAGRAMS
PRINTED CIRCUIT BOARD PARTS LAYOUT

GLOSSARY OF ABBREVIATIONS

A/C : Audio/Control
A-PB : Audio Play Back
A-REC : Audio Recording
AE : Audio Erase
AENV : Audio Envelope
AFC : Automatic Frequency Control
AFF : Audio Flip Flop
AFTV : Auto Fine Tuning Voltage
ALC : Automatic Level Control
AMODE : Audio Mode
AMPC : Amplifier Alternating Current Ground
APC : Automatic Phase Control
ATFN : Auto Fine
ATT : Attenuator

BLMUTE : Blue Back Mute

C/N : Carrier/Noise Ratio
CCD : Charge Coupled Device
CG-CS : Character Generator-Chip Slect
CHSW : Channel Switch
CLKSEL : Clock Select
CNTR : Counter
COM : Comparator
CONV SW : Converter Switch
CP-FG : Capstan-Frequency Generator
CP-REV : Capstan-Reverse
CPMOTORV : Capstan Motor Voltage
CROT : Chroma Rotation
CSYNC : Composite Synchronizing Signal
CTL : Control

D.E. : Detail Enhancer
D-FF : Drum Flip Flop
DEMOD : Demodulator
DET : Detector
DLY : Delay
DOC : Drop Out Compensator
DOCSTOP : Drop Out Control Stop
DR-FG : Drum-Frequency Generator
DR-OUT : Drum Control Out
DR-PG : Drum-Phase Generator

EE : Electronic-Electronic
EMPH : Emphasis
EP : Extended Play
EQ : Equalizer
ES : End Sensor

FBC : Feed Back Clamp
FE : Full Erase
FF : Fast Forward
FG : Frequency Generator
FLDCS : Fluorescent Tube Driver Chip Slect
FM : Frequency Modulation
FSC : Frequency of Color Subcarrier

G : Ground

HASW : Head Amplifier Switch
HFR400 : Hi-Fast Forward/Rewind 400
HFRSS : Hi-Fast Forward/Reverse Speed Search
HSYNC : Horizontal Synchronizing Signal

I-LIMIT : I(Current)-Limitter

JSTCLK : Just Clock

LIN-IN : Linear Audio In
LIN-OUT : Linear Audio Out
LMUTE : Linear Mute
LP : Long Play

MOD : Modulator
MOTORV : Motor Voltage

NL : Non Linear

OSC : Oscillator

PB : Play Back
PC : Position Control
PCB : Printed Circuit Board
PG : Pulse Generator
PLL : Phase Locked Loop
PRT : Protect
PSAVE : Power Save
PSLED : Power Save Light Emitting Diode
PSYNC : Pretended Vertical Synchronizing Signal
PWSV : Power Save
PWV : ON/OFF Command to supply B + Power

QH : Cue Horizontal Signal
QV : Cue Vertical Signal

REC : Recording
REC2 : Record Command for the PB/REC Control Circuit
RECPBC : Record/Play Back Chroma Signal
RES : Reset
RESPCM : Reset Pulse Code Modulation
REW : Rewind
RIS : Record Inhibit Switch
RMSDET : Root Mean Square Detector
RXD : Read X Data

SAPIND : SAP carrier detect Indicator
SCLK : Serial Clock
SCR : Scramble
SI : Serial control data Input
SLD : Side Lock Detector
SP : Standard Play
SS : Start Sensor
SSVSYNC : Speed Search Vertical Synchronizing Signal
STRB : Strobe
SU-SENS : Supply Reel Sensor

TSREC : Tape Simulate Recording
TSSW : Tape Simulator Switch
TU-SENS : Take Up Reel Sensor

V-REF : Voltage Reference
VBUSY : VSET Busy
VCA : Voltage Control Amplifier
VCO : Voltage Controlled Oscillator
VENV : Video Envelope
VSETCLK : VSET Clock
VSETCS : VSET Chip Select

YNR : Y(Luminance) Signal Noise Reduction

SAFETY PRECAUTIONS

INTRODUCTION

This manual provides service information for the adjustments of mechanical and electrical operations.
Due to design modifications, the servicing procedures and data given in this manual are subject to possible change without prior notice.

WARNING : Many of the programs broadcast by television stations are protected by copyright and Federal law imposes strict penalties for copyright infringement. Some motion picture companies have taken the position that home recording for noncommercial purposes is an infringement of their copyrights. Until the courts have ruled on the proper interpretation of the law as applied to home video recording, this equipment, if used to record copyrighted material, should be operated at the user's own risk.

WARNING :
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.
This video cassette recorder should be used with AC 120V, 60Hz only.

SAFETY NOTICE

Before returning VCR to the customer a safety check of the entire VCR should be made. The service technician must be sure that no protective device built into the instrument by the manufacturer has become defective or inadvertently damaged during servicing. Observe all caution and safety related notes located on or inside the VCR cabinet.
WARNING : Alterations of the design or circuitry of this VCR should not be made. Any design alterations or additions, such as circuit modifications, auxiliary speaker jacks, switches, grounding, active or passive circuitry, etc., or use of unauthorized camera, cables, accessories, etc. may alter the safety characteristics of this VCR and potentially create a hazardous situation for the user. Any design alterations or unauthorized additions will invalidate the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting from them. Do not lubricate any motors. When reassembling the VCR, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, shield plates, etc. When service is required, observe the original lead dress. Components that show evidence of overheating or other electrical or mechanical damage should be replaced.

WARNING : **Replace with same type 1.6A, 125V FUSE.**

LEAKAGE CURRENT CHECK

Before returning the VCR to the customer, it is recommended the leakage current be measured by the following methods.

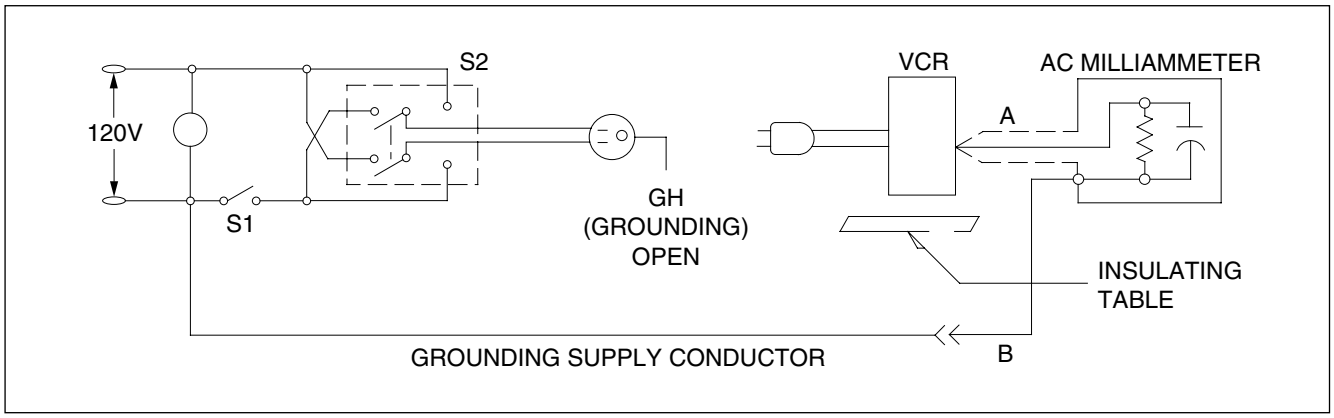
1. Cold Check
   With the AC plug removed from the 120V AC source, place a jumper across the two AC plug prongs. Turn the AC switch on. Using an ohmmeter, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 MΩ. Any resistance below this value indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

2. Hot Check

The test sequence, with reference to the measuring circuit in the figure is as follows:

(1) With switch S1 open, connect the VCR to the measuring circuit. Immediately after connection, measure the leakage current using both positions of switch S2 and with the switching devices in the VCR in all of their operating positions.

(2) Close switch S1, energizing the VCR, and immediately after closing the switch, measure leakage current using both positions of switch S2, and with the switching devices in the VCR in all of their operating positions. Repeat the current measurements of items (1) and (2) after the VCR has reached thermal stabilization. The leakage current should not be more than 0.5 mA.



AC Leakage Test

Avoid shock hazards. Do not connect this VCR to a TV antenna, cable or accessory that exhibits excessive leakage currents. If available, the television instrument or cable to which this VCR is connected should have the antenna cold check and leakage current hot check performed.

PRECAUTIONS

Handling and storage

- Avoid using the VCR in the following places:
  - extremely hot, cold or humid places,
  - dusty places,
  - near appliances generating strong magnetic fields,
  - places subject to vibration,
  - poorly ventilated areas.
- Be careful of moisture condensation.
- If you pour a cold liquid into a glass, water vapor in the air will condense on the surface of the glass. This is called moisture condensation.
- Moisture condensation on the head drum, one of the most critical parts of the VCR, will cause damage to the tape.
- The VCR is equipped with a moisture condensation prevention circuit. This circuit operates only when the unit is attached to an AC outlet.
- Handle the VCR carefully.
- Do not block the ventilation openings.
- Do not place anything heavy on the recorder.
- Do not place liquids on the top cover of the recorder.
- Use the Recorder in horizontal (flat) position only.
- Avoid violent shocks to the recorder during packing and transportation.
- Before packing, be sure to remove the cassette from the recorder.

CONNECTION

Connecting separate antennas (UHF/VHF)

Connecting the Television

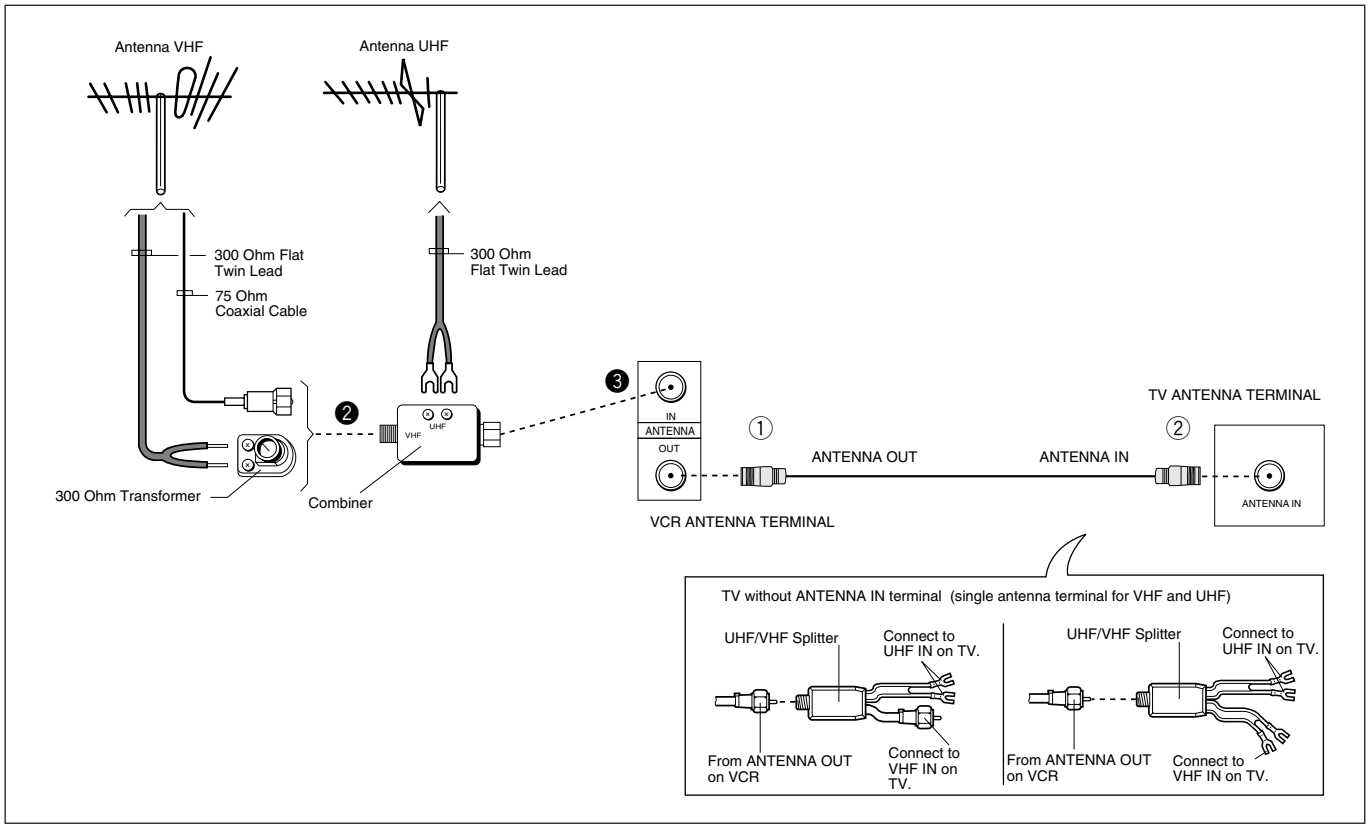
To connect separate UHF/VHF antennas to the VCR:

1. Disconnect the antennas from the back of your TV.
2. Connect the antenna leads to the combiner.
3. Screw or push the combiner onto the ANTENNA terminal on the VCR labeled ANTENNA IN.
4. When you are finished, refer to “Connecting the Television” to complete your connections.

Now that you’ve completed the antenna connections to your VCR, you’re ready to connect the VCR to the TV.

Because every television is different (especially older model TVs), your VCR may need to be connected in a variety of ways. See the Owner’s Manual for Instruction Information ON:

- **Determining if you need a splitter,**
- **Connecting TVs with audio and video inputs.**



Connecting a regular TV to the VCR

Before connecting the VCR to the TV, complete the cable or antenna connections to the VCR. (If you have not already done so.)

To connect a regular TV to the VCR:

1. Take the black cable that is supplied with your VCR (called a coaxial cable) and connect it to the ANTENNA terminal on the VCR labeled ANTENNA OUT.
2. Connect the other end of this cable to the terminal on your TV labeled ANTENNA IN. (This terminal may also be labeled VHF IN.) If you have an older TV without this kind of terminal, you will have to use a splitter and then connect the splitter to the television.

WARNING

Use the specified batteries.

Batteries of wrong type can lead to explosion.

Be sure to replace with batteries of the same type or equivalent batteries. Use the parts specified in the circuit diagram or parts list.

Confirm that the batteries are placed with their positive (+) and negative (-) in the correct position.

DISASSEMBLY

1. Removal of Top Cover

1. Remove the two Top Cover fastening screws (ⓐ) shown in Fig. 1 and remove the Top Cover in the direction shown by arrow.

2. Removal of Front Panel

1. Remove the Top Cover.
   (Refer to Para. 1 of the DISASSEMBLY.)
2. Unfasten the seven catches (ⓑ) shown in Fig. 1 and remove the Front Panel in the direction shown by arrows.

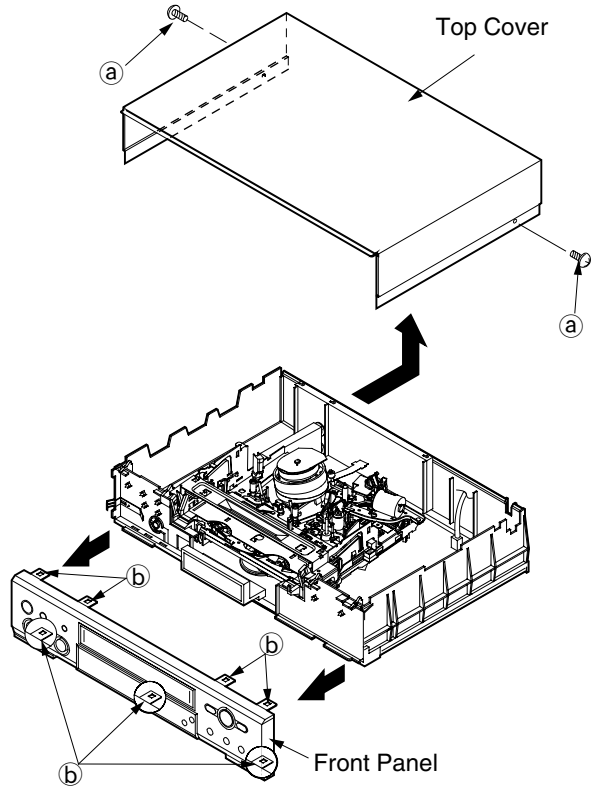


Fig. 1

3. Removal of Bottom Panel

1. Remove the two fastening screws (ⓐ) shown in Fig. 2.
2. Turn the set upside down as shown in Fig. 3.
3. Slide the Bottom Panel backward to remove it, taking care of the five catches (ⓑ).

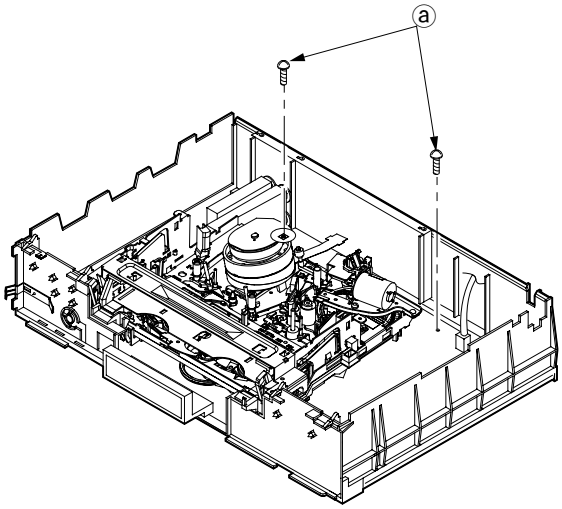


Fig. 2

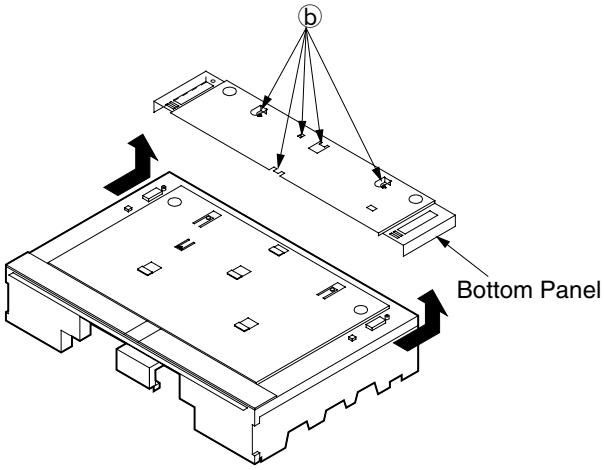


Fig. 3

4. Removal of DECK ASSY

1. Remove the Top Cover.
   (Refer to Para. 1 of the DISASSEMBLY.)
2. Remove the Front Panel.
   (Refer to Para. 2 of the DISASSEMBLY.)
3. Short-circuit the cathode side of D927 and the GND of the DECK ASSY using the jig shown below.

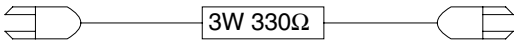
Note: The CAPSTAN MOTOR may be damaged without above short circuit.

4. Remove the two screws (ⓐ) shown in Fig. 4 and raise the Shield Cover to remove it.
5. Remove the four screws (ⓑ) shown in Fig. 5.
6. Disconnect the Connectors MA, MD, MH and ML.
7. Release the two catches (ⓒ) shown in Fig.5 and raise the the DECK ASSY to remove it.

Note1: Remove the DECK ASSY paying attention to the Connectors MC and MF under it.

Note2: Short-circuit the cathode side of D927 and the Shield Case using the jig shown below before attaching the DECK ASSY.

Jig (Part No. : 859C548O10)



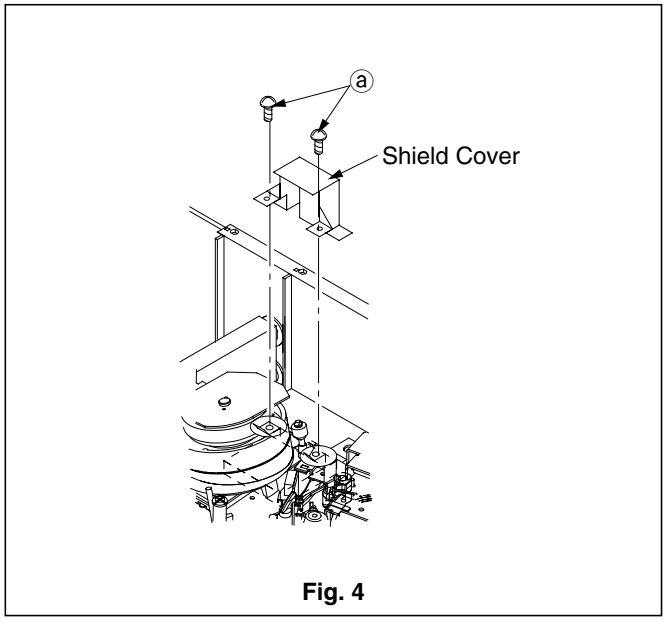


Fig. 4

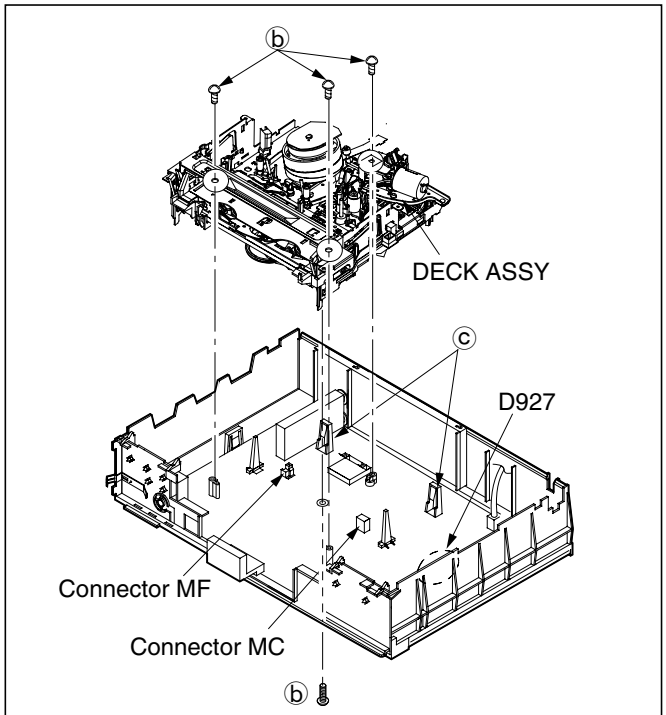


Fig. 5

HOW TO EXECUTE CIRCUIT BOARD SERVICE

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE A.C. SOURCE.

LOCATION OF PRINTED CIRCUIT BOARDS

Note :

- Take caution when removing flat cables to prevent any contact problem.
- Connect and disconnect the flat cables at right angles to the connector and make sure that it is completely secured.
- After servicing the PCB, restore the flat cable and leads to their former state.

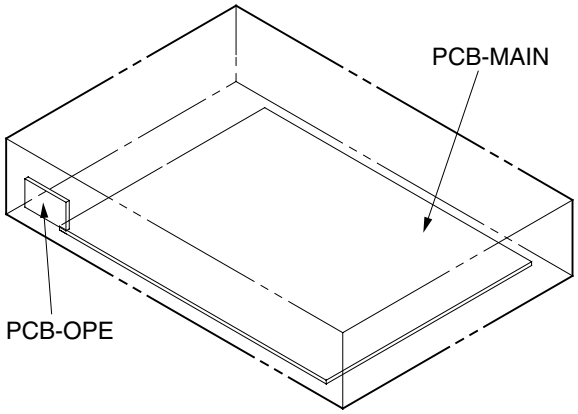


Fig. 6

1. PCB-OPE

1. Remove the Top Cover.
   (Refer to Para. 1 of the DISASSEMBLY.)
2. Remove the Front Panel.
   (Refer to Para. 2 of the DISASSEMBLY.)
3. Unfasten the fastening screw (ⓐ) and remove the PCB-OPE as shown in Fig. 7.

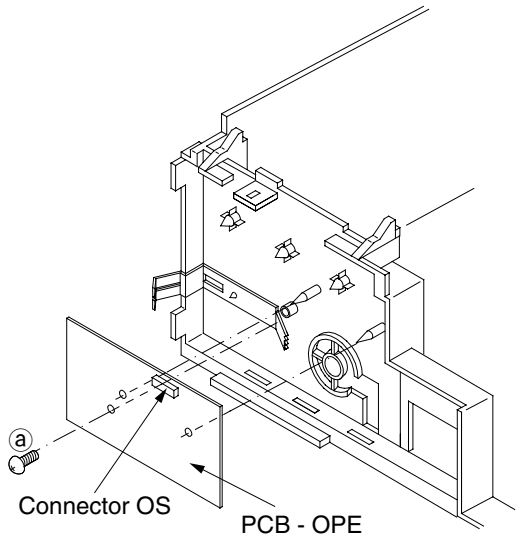


Fig. 7

2. PCB-MAIN

1. Remove the Bottom Panel.
   (Refer to Para. 3 of the DISASSEMBLY.)
2. Remove the DECK ASSY.
   (Refer to Para. 4 of the DISASSEMBLY.)
3. Remove the two screws (ⓐ) shown in Fig. 8.
4. Remove the Holder for the AC Power Cord from the Base Chassis shown in Fig. 9.
5. Release the two fastening catches (ⓑ) shown in Fig. 8. Raise the PCB-MAIN to remove it.
6. Unfasten the fastening one screws (ⓒ) shown in Fig.10 and remove the Antenna Cover.
7. Raise the three fastening catches (ⓓ) shown in Fig.10 and remove the Antenna Cover.

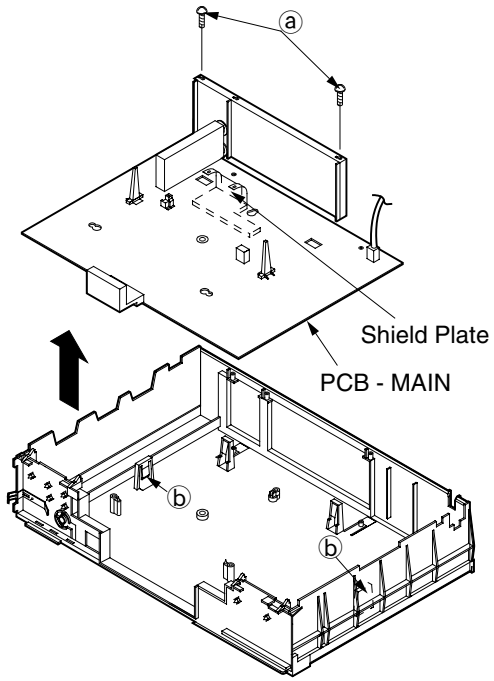


Fig. 8

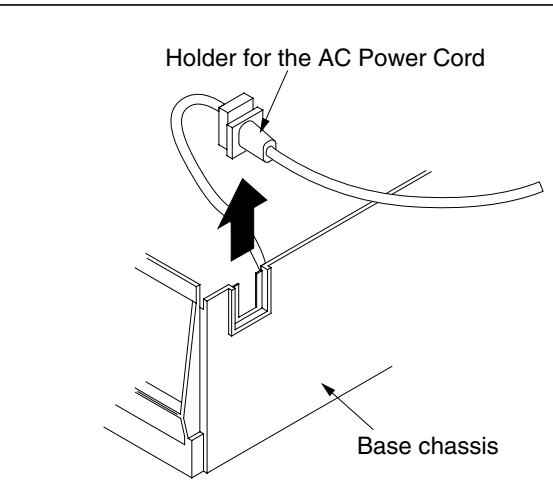


Fig. 9

◪ Service of PCB

- **Head Amp block**

1. Unsolder the four soldering points of the Shield Case shown in Fig. 8 and remove it.

Note: Before checking the operation, mount the Shield Case and the Shield Plate on the original position. If not provided, beat or picture disturbance may appear.

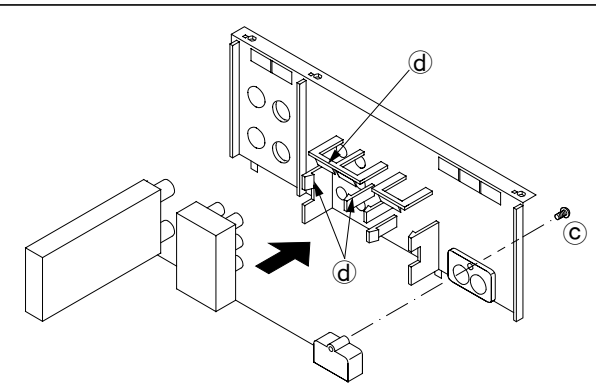


Fig. 10

CHIP PARTS REPLACEMENT

CHIP PARTS REPLACEMENT

Some resistors, shorting jumpers (0Ω resistor), ceramic capacitors, transistors and diodes are chip parts.
When replacing these parts, note the following cautions.

Cautions :

A. Use fine tipped, well insulated soldering pencil (iron), about 30 watts, and tweezers.
B. Melt the solder and remove the Chip Parts carefully not to tear off the copper foil of the printed circuit board.
C. Discard removed chips ; do not reuse them.
D. Do not apply heat for more than 3 seconds to new Chip Parts.
E. Avoid using a rubbing stroke when soldering.
F. Take care not to scratch, or damage the Chip Parts when soldering.
G. Supplementary cementing is not required.

1. Removal of Chip Parts (Resistors, capacitors, etc.)

A. Grasp the part with tweezers. Melt the solder at both sides alternately, remove one side of the part with a twisting motion.
B. Melt the solder at the other side and remove the part.

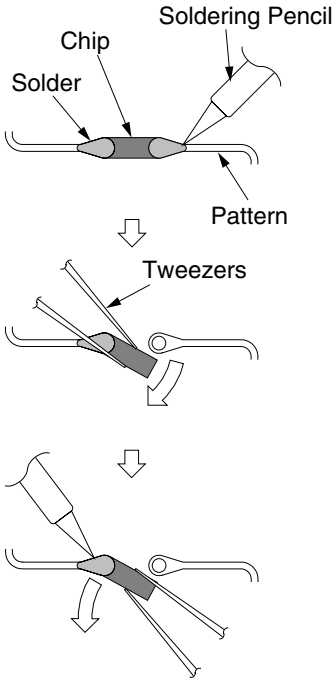


Fig. 1

2. Removal of Chip Parts (Transistors)

A. Melt the solder of one lead. Lift the side of that lead upward.
B. Simultaneously melt the solder of the two remaining leads and lift the part from the PCB.

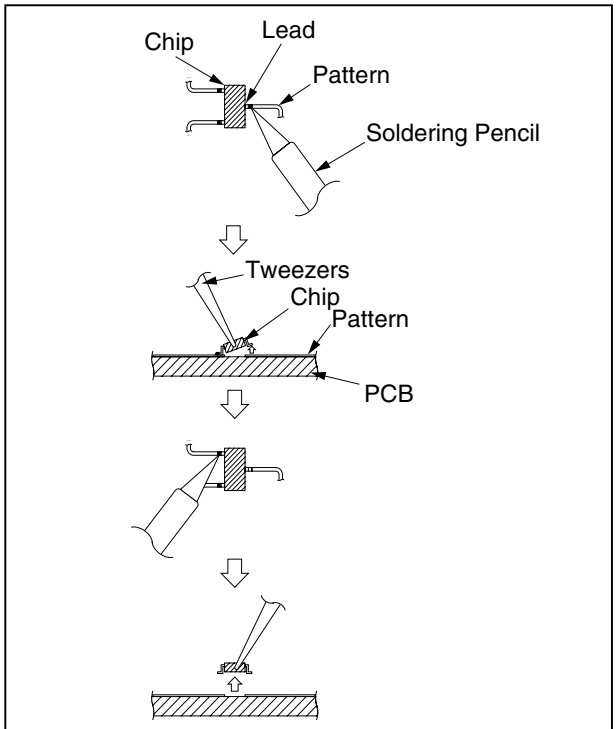


Fig. 2

3. Replacement

A. Presolder the contact points of the circuit pattern.
B. Press the part downward with tweezers and apply the soldering pencil as shown in Fig. 3.

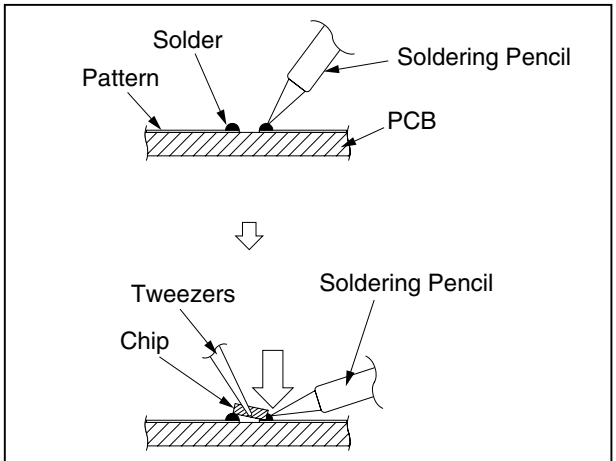


Fig. 3

MECHANICAL ADJUSTMENT AND REPLACEMENT

1. DECK Cleaning

The following Parts require cleaning whenever serviced in order to maintain satisfactory performance.

1-1. VIDEO HEAD

1. Clean the VIDEO HEAD according to the following method. Dust and other foreign objects on the VIDEO HEAD disturb the normal PLAYBACK picture. To clean the VIDEO HEAD, hold a VIDEO HEAD cleaning cloth dampened with alcohol against the DRUM and slowly turn the DRUM counter-clockwise.

Note : Do not directly touch the HEADS installed to the UPPER DRUM ASSY. The HEADS are very hard but brittle to shock (especially to shock in the vertical direction) and easily breakable. Never apply force to it in the vertical direction.

2. Allow the residual alcohol to dry thoroughly before running a tape. The residual alcohol on the HEADs may damage the tape if not dried completely.

UPPER DRUM ASSY cleaning

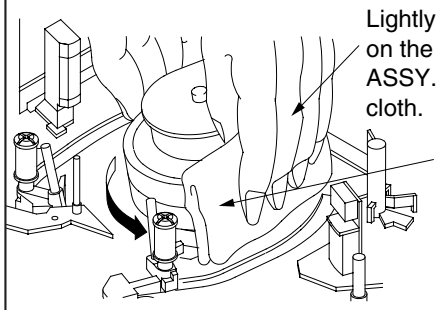


Fig. 1-1

1-2. Tape Running System

Clean the following Parts of the Tape Running System.

1. TENSION PIN
2. F/E HEAD
3. SLANT POLE (SP)
4. SLANT POLE (TU)
5. A/C HEAD
6. GUIDE POLE (TU)
7. PINCH ROLLER
8. GUIDE PIN (TU)
9. GUIDE ROLLER (SP)
10. UPPER / LOWER DRUM ASSY
11. GUIDE ROLLER (TU)
12. CAPSTAN SHAFT
13. IMPEDANCE UNIT (SP)

1. Clean the Tape Running System, using a piece of gauze dampened with alcohol, except for the GUIDE ROLLER (SP), GUIDE ROLLER (TU), and PINCH ROLLER which require to be cleaned with a piece of dry gauze.
2. Allow the residual alcohol to dry thoroughly before running the tape. The residual alcohol on the SYSTEM may damage the tape if not dried completely.

1-3. REEL DISK Drive System

1. Clean the BRAKE side and REEL BELT of the REEL DISK Drive System.
2. Clean the REEL DISK Drive System, using a piece of gauze dampened with alcohol, except for the REEL BELT which requires cleaning with a piece of dry gauze.
3. Allow the residual alcohol to dry thoroughly before operation.

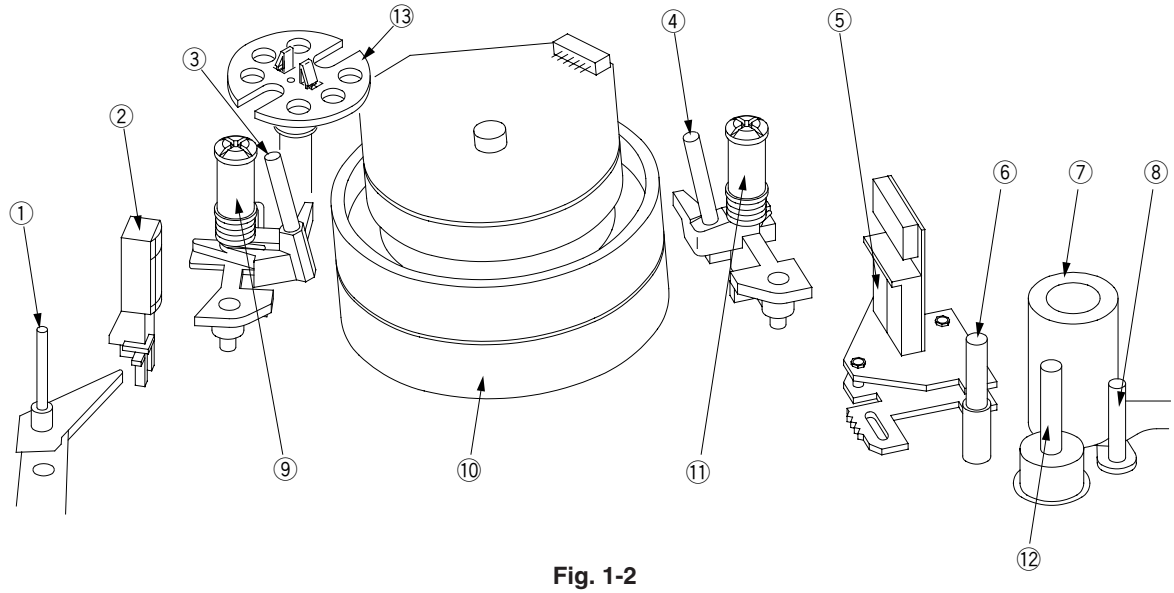


Fig. 1-2

2. Replacement of Major Parts

2-1. CLEANING ARM, FELT RING

SET POSITION : Normal

(Removal)

1. Release the two catches (ⓐ) of the CLEANING ARM shown in the Fig. 2-1 to remove the CLEANING ARM.
2. Release the two catches (ⓑ) of the CLEANING ARM shown in the Fig. 2-1 to remove the FELT RING.

(Installation)

1. Install the FELT RING shown in the Fig. 2-1 to the CLEANING ARM.
2. Install the CLEANING ARM shown in the Fig. 2-1.

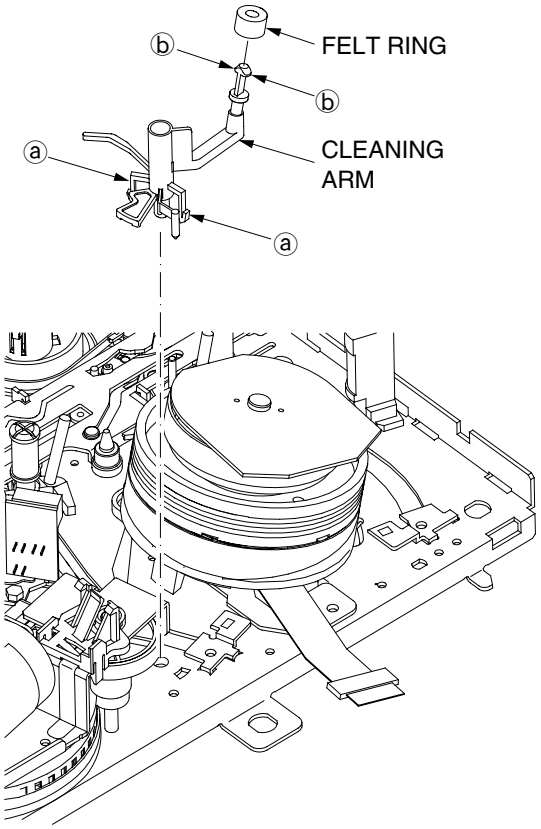


Fig. 2-1

2-2. STAY PLATE

SET POSITION : Normal

(Removal)

1. Remove the two screws (ⓐ) fastening the STAY PLATE shown in the Fig. 2-2 to remove the STAY PLATE.

(Installation)

1. Install the STAY PLATE shown in the Fig. 2-2.

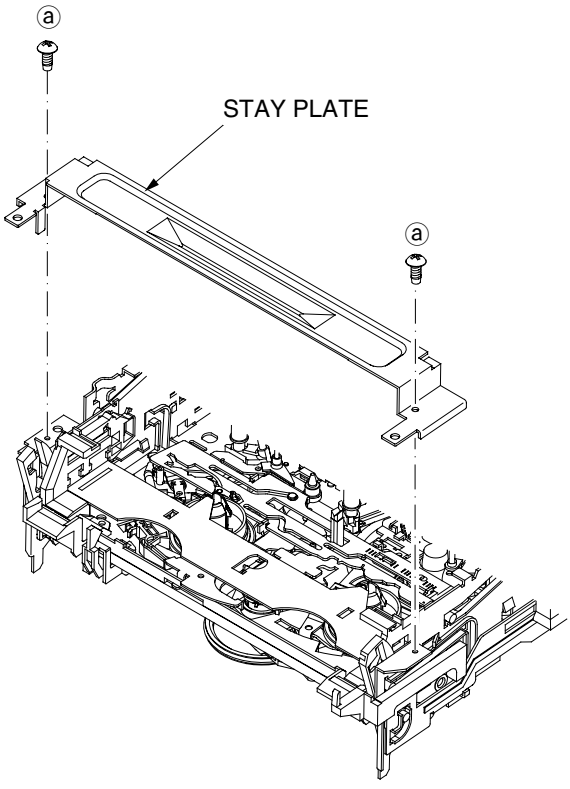


Fig. 2-2

2-3. BOTTOM ASSY

SET POSITION : Normal

Remove the following part before replacing the BOTTOM ASSY. Refer to the corresponding item to install it.

- STAY PLATE (Item 2-2)

(Removal)

1. Move the WORM WHEEL in the Fig. 2-3-1 in the direction shown by the arrow Ⓐ. And match the Boss ⓐ of the BOTTOM ASSY with the Hole in the MAIN PLATE ASSY.
2. Lift the BOTTOM ASSY in the Fig. 2-3-1 in the direction shown by the arrow Ⓑ and pull it out in the direction shown by the arrow Ⓒ.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the Grooves of the MAIN PLATE ASSY shown in the Fig. 2-3-2.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the Bosses of the BOTTOM ASSY shown in the Fig. 2-3-2.
3. Rotate the WORM WHEEL shown in the Fig. 2-3-1 so that the ARM (SP) stands vertically.
4. Insert the Boss ⓑ of the BOTTOM ASSY shown in the Fig. 2-3-2 in the Upper Groove of the MAIN PLATE and the Boss ⓒ in the Lower Groove.
5. Insert the Boss ⓓ of the BOTTOM ASSY to the Upper Groove through the Hole in the MAIN PLATE ASSY shown in the Fig. 2-3-1 and the Boss ⓔ to the Lower Groove through the slot in the ARM (SP).

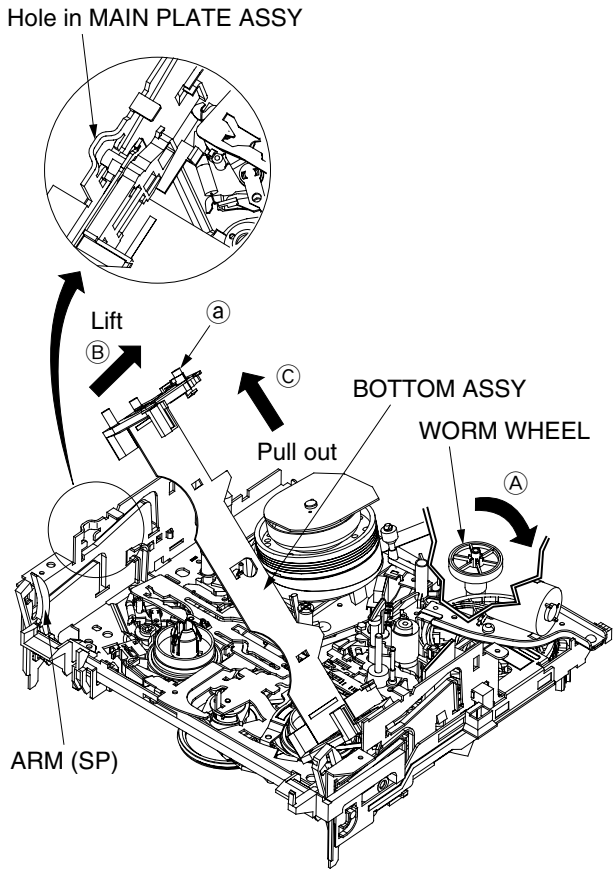


Fig. 2-3-1

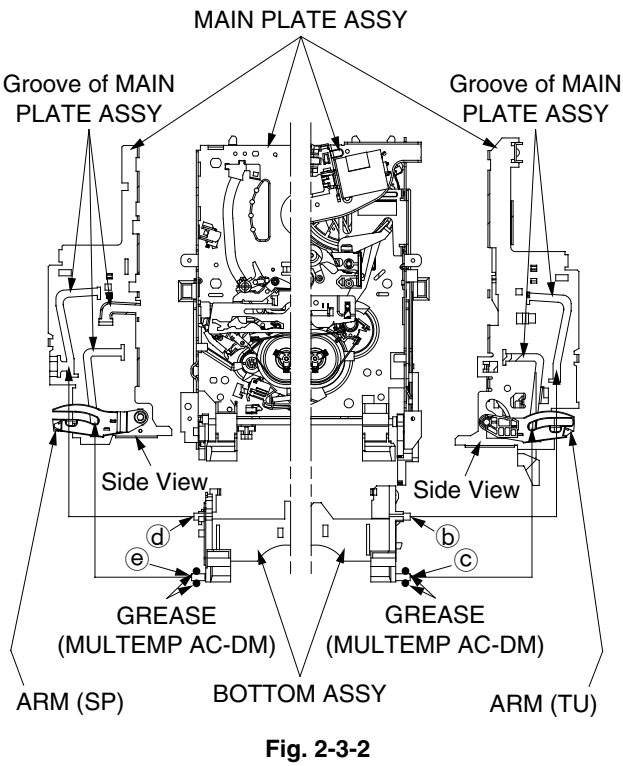


Fig. 2-3-2

2-4. INSERT GUIDE (TU)

SET POSITION : Normal

Remove the following parts before replacing the INSERT GUIDE (TU). Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)

(Removal)

1. Remove the screw (ⓐ) fastening the INSERT GUIDE (TU) shown in the Fig. 2-4 to remove the INSERT GUIDE (TU).

(Installation)

1. Install the INSERT GUIDE (TU) shown in the Fig. 2-4.

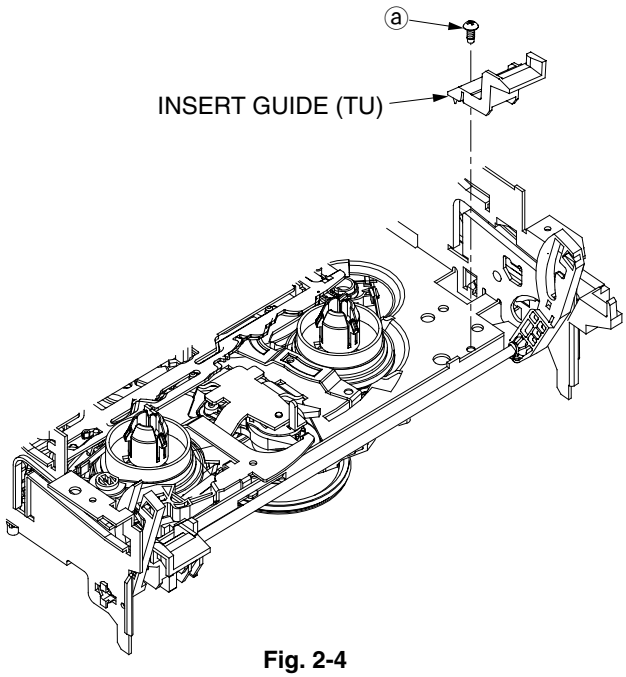


Fig. 2-4

2-5. INSERT GUIDE (SP)

SET POSITION : Normal

Remove the following parts before replacing the INSERT GUIDE (SP). Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)

(Removal)

1. Remove the screw (ⓐ) fastening the INSERT GUIDE (SP) shown in the Fig. 2-5 to remove the INSERT GUIDE (SP).

(Installation)

1. Install the INSERT GUIDE (SP) shown in the Fig. 2-5.

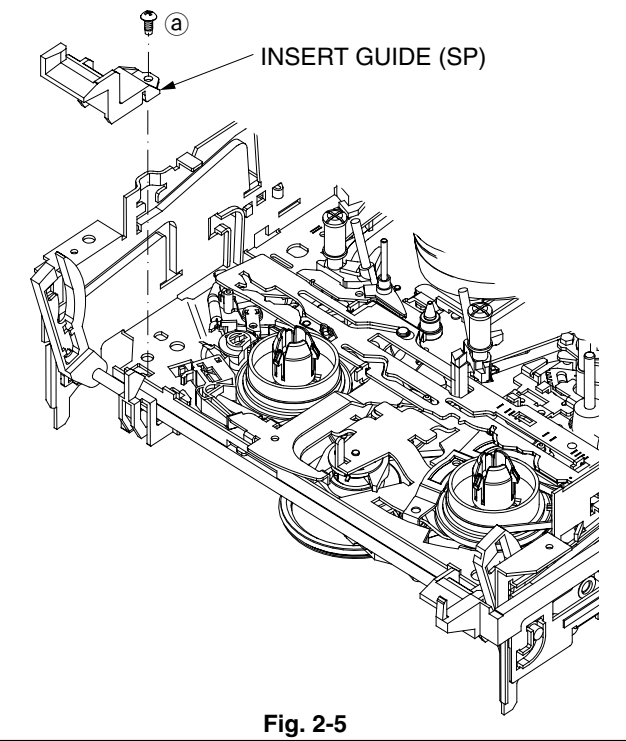


Fig. 2-5

2-6. REC HOLDER, REC LEVER, REC SPRING

SET POSITION : Upside down

(Removal)

1. Remove the screw (ⓐ) fastening the REC HOLDER shown in the Fig. 2-6 to remove the REC HOLDER.
2. Release the REC SPRING shown in the Fig. 2-6 from the catch (ⓑ) of the REC HOLDER to remove the REC LEVER.
3. Release the two catches (ⓒ) of the REC LEVER shown in the Fig. 2-6 to remove the REC SPRING.

(Installation)

1. Install the REC SPRING shown in the Fig. 2-6 to the REC LEVER and hook the REC SPRING to the catches (c).
2. Install the REC LEVER shown in the Fig. 2-6 to the REC HOLDER.
3. Hook the REC SPRING shown in the Fig. 2-6 to the catch (b).
4. Install the REC HOLDER shown in the Fig. 2-6.

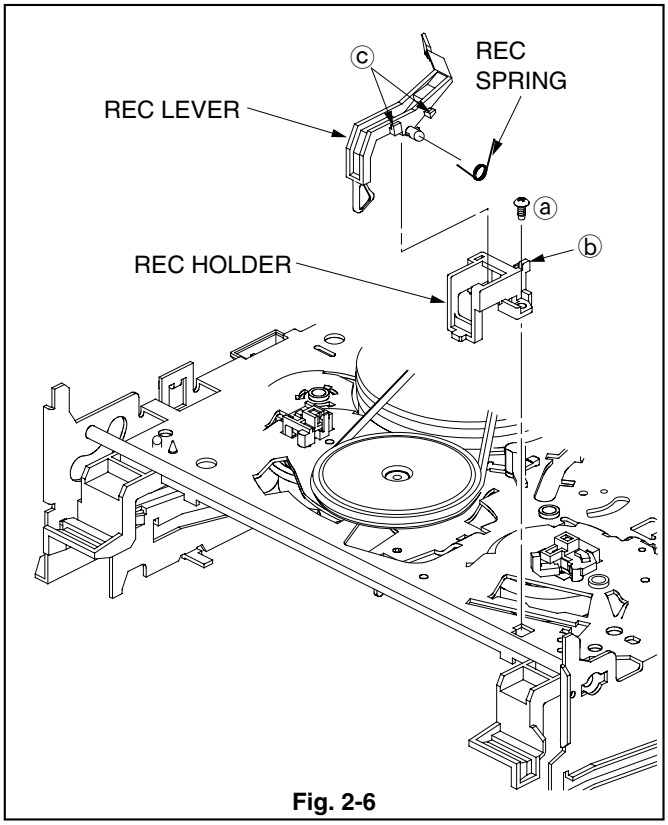


Fig. 2-6

2-7. F/L ARM ASSY, F/L BEARING

SET POSITION : Normal

Remove the following parts before replacing the F/L ARM ASSY, F/L BEARING. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- INSERT GUIDE (TU) (Item 2-4)
- INSERT GUIDE (SP) (Item 2-5)
- REC HOLDER (Item 2-5)

(Removal)

1. Release the catch (ⓐ) of the F/L BEARING shown in the Fig. 2-7 and pull out the F/L ARM ASSY in the direction shown by the arrow Ⓐ.

Note : Do not pull the F/L ARM by force because it may break the catch (ⓐ) of the F/L BEARING.

2. Release the catch (ⓑ) of the F/L BEARING shown in the Fig. 2-7 and rotate the F/L BEARING by 90 degrees to remove it.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the Groove of the MAIN PLATE ASSY shown in the Fig. 2-7.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the Boss of the ARM (SP) shown in the Fig. 2-7.
3. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the Bosses of the ARM (TU) shown in the Fig. 2-7.
4. Install the F/L BEARING shown in the Fig. 2-7.
5. Insert the Boss ⓒ of the F/L ARM ASSY shown in the Fig. 2-7 into the Groove ⓓ of the MAIN PLATE ASSY to install the F/L ARM ASSY.

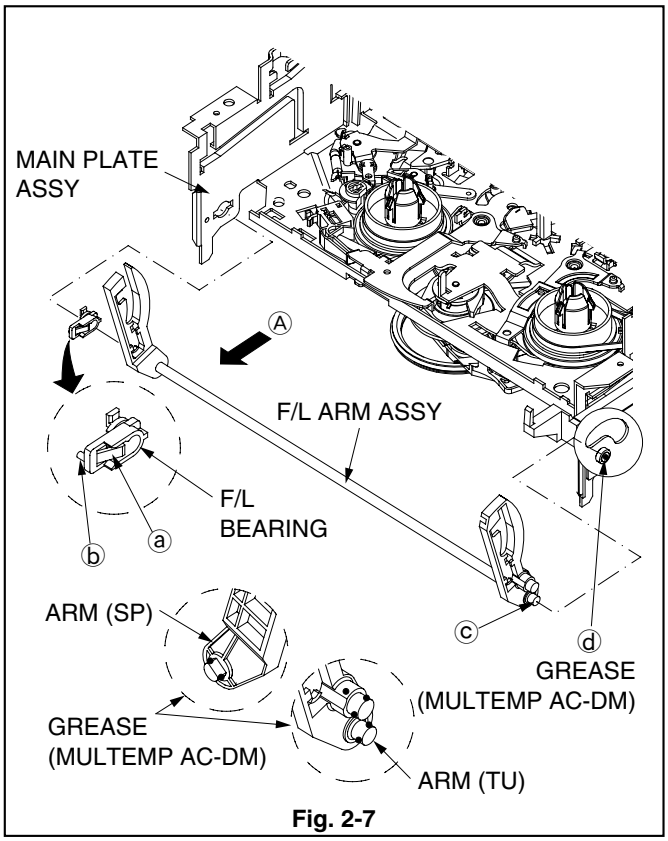


Fig. 2-7

2-8. A/C HEAD UNIT

SET POSITION : Normal

(Removal)

1. Remove the LEAD CONNECTOR of the A/C HEAD UNIT shown in the Fig. 2-8.
2. Remove the two screws (ⓐ) fastening the A/C HEAD UNIT shown in the Fig. 2-8 to remove the A/C HEAD UNIT.

(Installation)

1. Install the A/C HEAD UNIT shown in the Fig. 2-8.

Note : Never touch the Head of the A/C HEAD UNIT shown in the Fig. 2-8. Clean the dirt on the Head with alcohol if necessary.

2. Install the LEAD CONNECTOR of the A/C HEAD UNIT shown in the Fig. 2-8.
3. Perform the Item 3-3. "A/C HEAD Adjustment" and Item 3-4. "Phase Adjustment" of the "Interchangeability Adjustment of the Mechanism".

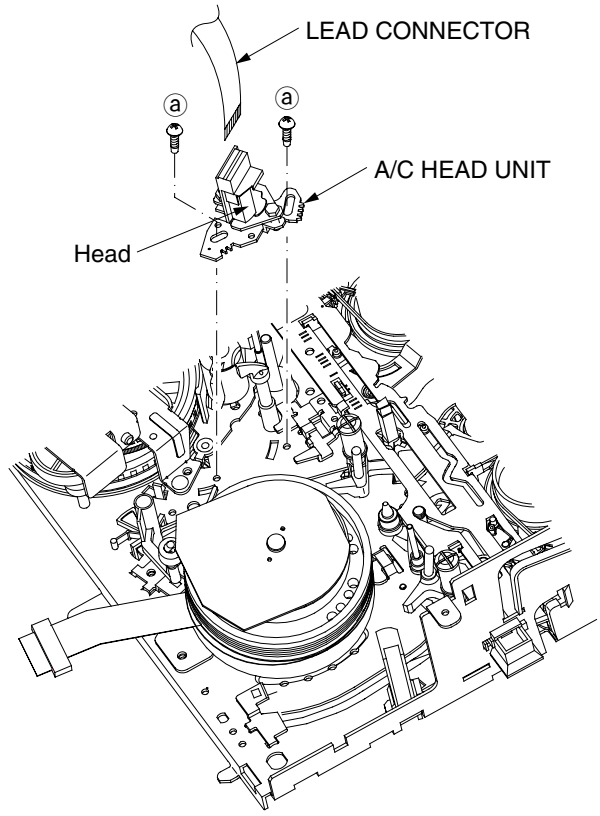


Fig. 2-8

2-9. F/E HEAD

SET POSITION : Normal

(Removal)

1. Lift the F/E HEAD shown in the Fig. 2-9-1 in the direction by the arrow Ⓐ to remove it.

Note : Be sure to replace the removed F/E HEAD with a new one.

(Installation)

1. Install the F/E HEAD shown in the Fig. 2-9-1.

Note : Never touch the Head shown in the Fig. 2-9-2. Clean it with alcohol if necessary.

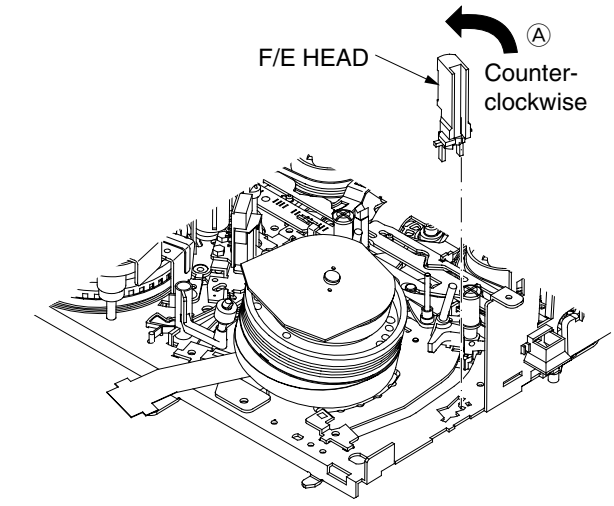


Fig. 2-9-1

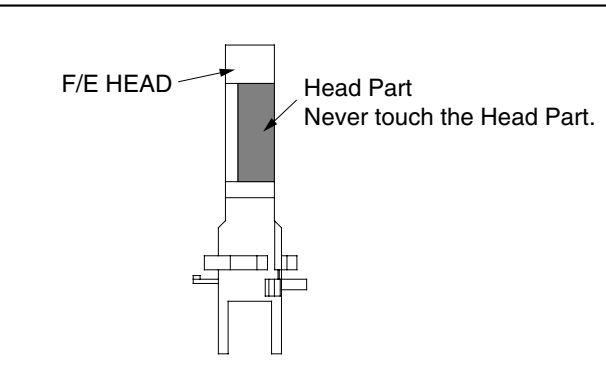


Fig. 2-9-2

2-10. SENSOR COVER (TU)

SET POSITION : Normal

(Removal)

1. Release the catch (ⓐ) of the SENSOR COVER (TU) shown in the Fig. 2-10 to remove the SENSOR COVER (TU).

(Installation)

1. Install the SENSOR COVER (TU) shown in the Fig. 2-10.

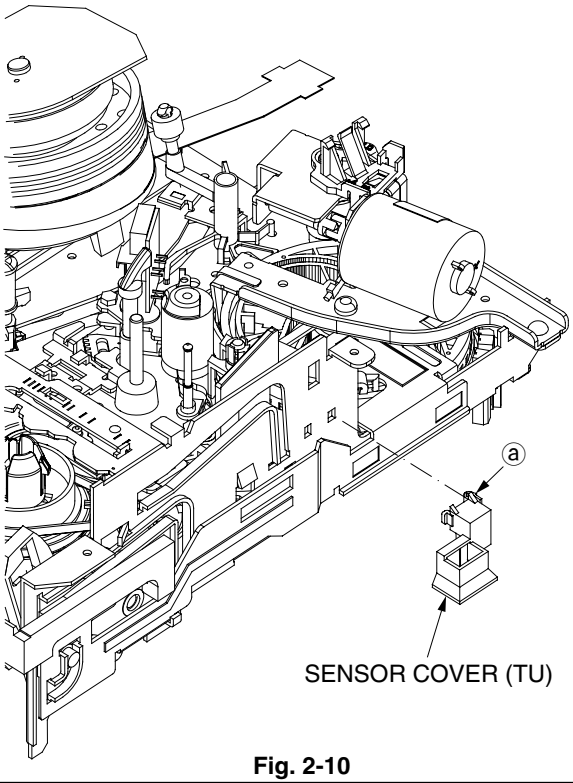


Fig. 2-10

2-11. SENSOR COVER (SP)

SET POSITION : Normal

(Removal)

1. Remove the catch (ⓐ) of the SENSOR COVER (SP) shown in the Fig. 2-11 to remove the SENSOR COVER (SP).

(Installation)

1. Install the SENSOR COVER (SP) shown in the Fig. 2-11.

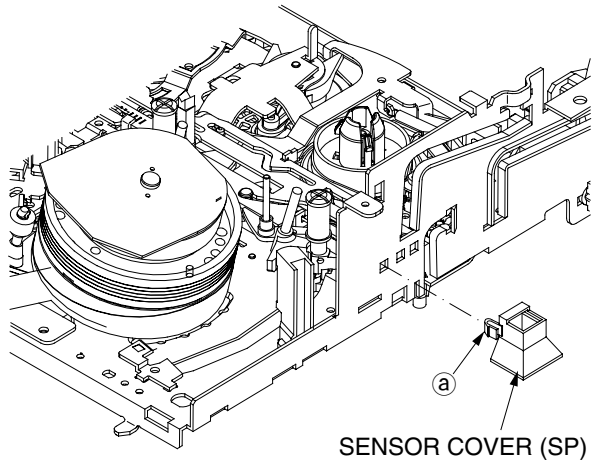


Fig. 2-11

2-12. REV UNIT (TU), REV UNIT (SP)

SET POSITION : Upside down

(Removal)

1. Release the two catches (ⓐ) of the REV UNIT (TU) shown in the Fig. 2-12 to remove the REV UNIT (TU).
2. Release the two catches (ⓑ) of the REV UNIT (SP) shown in the Fig. 2-12 to remove the REV UNIT (SP).

(Installation)

1. Clean the dirt on the transparent part of the REV UNIT (TU) with a VIDEO HEAD cleaning cloth.

Note : Never use solvent such as alcohol to clean the REV UNIT (TU).

2. Install the REV UNIT (TU) shown in the Fig. 2-12.
3. Clean the dirt on the transparent part of the REV UNIT (SP) with a VIDEO HEAD cleaning cloth.

Note : Never use solvent such as alcohol to clean the REV UNIT (SP).

4. Install the REV UNIT (SP) shown in the Fig. 2-12.

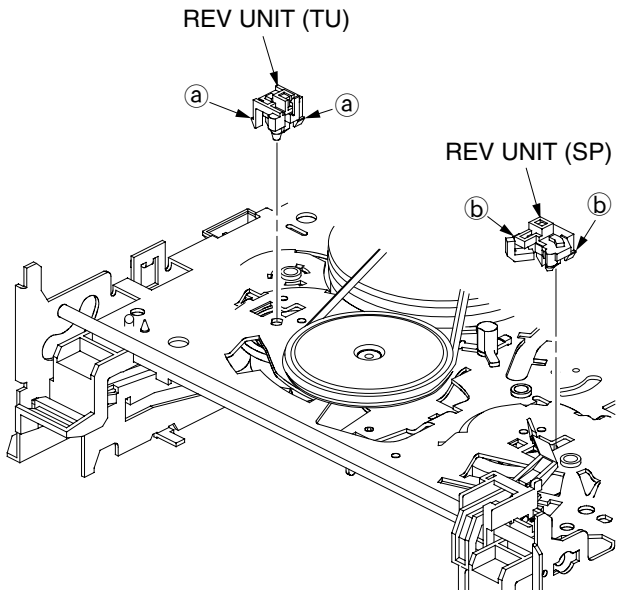


Fig. 2-12

2-13. MODE POSITION UNIT

SET POSITION: Upside down

(Removal)

1. Release the two catches (ⓐ, ⓑ) of the MODE POSITION UNIT shown in the Fig. 2-13 to remove the MODE POSITION UNIT.

(Installation)

1. Install the catch (ⓑ) of the MODE POSITION UNIT shown in the Fig. 2-13.
2. Install the catch (ⓐ) of the MODE POSITION UNIT shown in the Fig. 2-13.

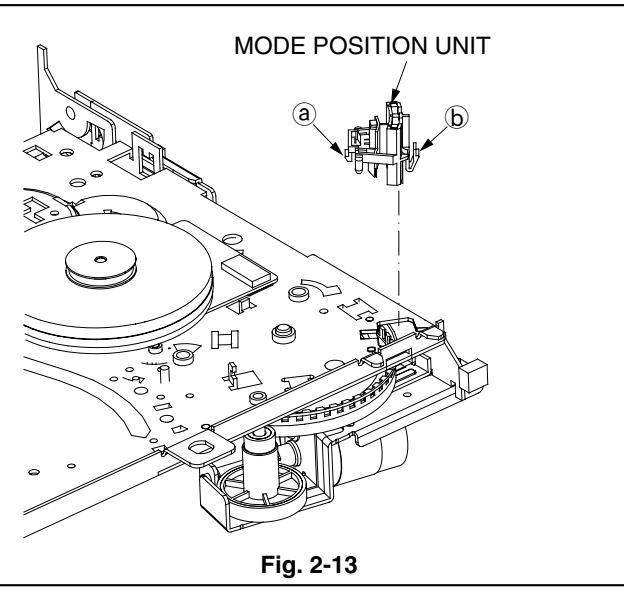


Fig. 2-13

2-14. REEL BELT, PULLEY BUSH, THRUST WASHER, BELT PULLEY, SHIFT SLIDER, PULLEY GEAR ASSY, SLIP GEAR, SLIP SPRING, SLIP 2 WASHER, THRUST WASHER, SLIP ADJUSTER, IDLER 2 UNIT

SET POSITION : Upside down

(Removal)

1. Remove the REEL BELT shown in the Fig. 2-14-1.
2. Move the SHIFT SLIDER in the Fig. 2-14-1 in the direction shown of the arrow Ⓐ to remove the SHIFT SLIDER from the SHIFT LEVER.
3. Release the two catches (ⓐ) of the PULLEY BUSH shown in the Fig. 2-14-1 to remove the PULLEY BUSH.

Note : Be sure to replace the removed PULLEY BUSH with a new one.

4. Remove the units from the THRUST WASHER to IDLER 2 UNIT shown in the Fig. 2-14-1.

(Installation)

Note : Be careful so that GREASE and OIL does not adhere on the Felt Side of the PULLEY GEAR ASSY or the Grooved Side of the SLIP GEAR shown in the Fig. 2-14-4.

1. Apply OIL (FLOIL 948P) [859D154O20] to the SHAFT for the IDLER 2 UNIT shown in the Fig. 2-14-1.
2. Apply GREASE (PG-641) [859D055O30] to the parts on the IDLER 2 UNIT specified in the Fig. 2-14-1.
3. Apply GREASE (MULTEMP AC-DM) [859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-14-1.
4. Apply GREASE (PG-641) [859D055O30] to the parts on the new SHIFT SLIDER specified in the Fig. 2-14-2.
5. Apply GREASE (PG-641) [859D055O30] to the parts on the new SLIP ADJUSTER specified in the Fig. 2-14-2.
6. Apply GREASE (PG-641) [859D055O30] to the parts on the new BELT PULLEY specified in the Fig. 2-14-3.
7. Install the IDLER 2 UNIT shown in the Fig. 2-14-1.
8. Install the SLIP ADJUSTER shown in the Fig. 2-14-3, matching the Lug of the SLIP ADJUSTER with the Center Notch of the IDLER 2 UNIT.

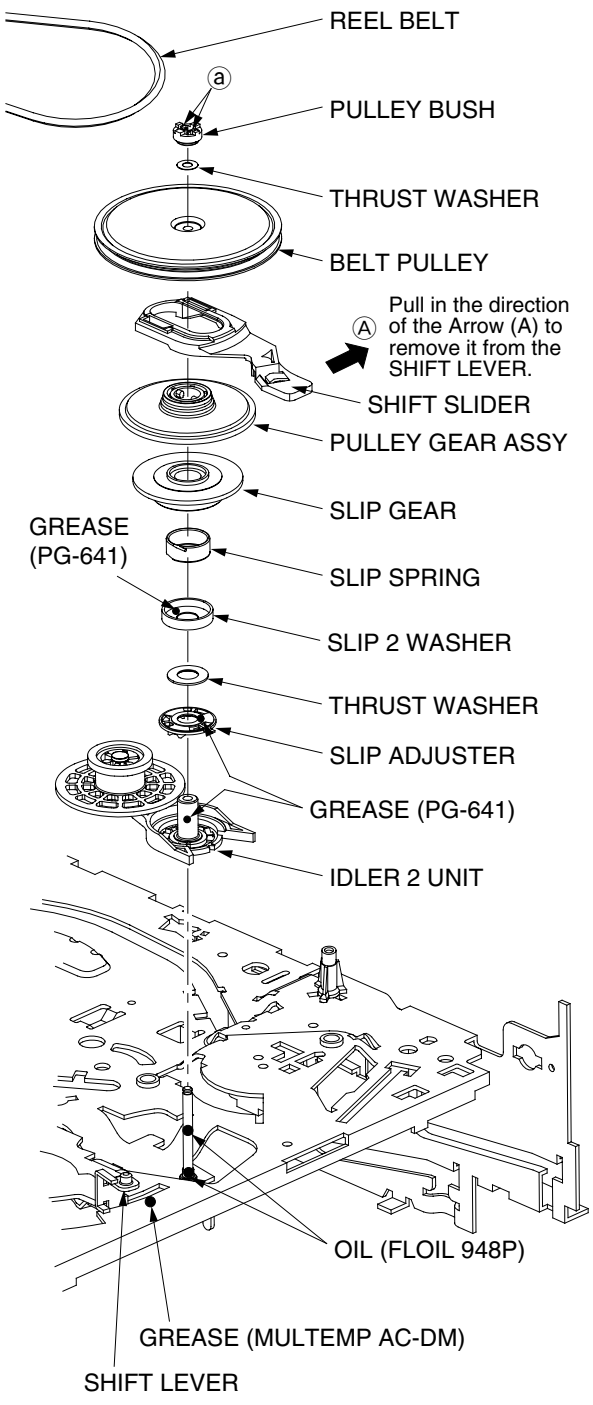
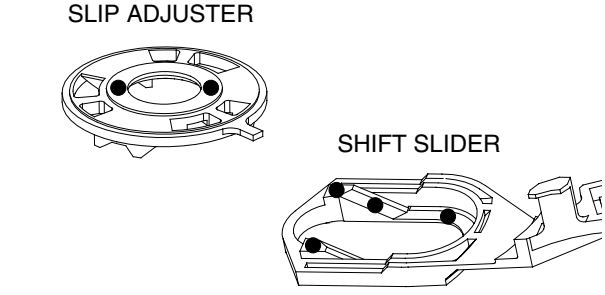


Fig. 2-14-1



Apply GREASE (PG-641) to the parts ●.

Fig. 2-14-2

9. Install the units from the SLIP 2 WASHER to REEL BELT shown in the Fig. 2-14-1.

Note1 : Be sure to replace the removed PULLEY BUSH with a new one.

Note2 : Attach the SLIP SPRING with its straight end facing the SLIP GEAR side.

Note3 : Attach the SLIP 2 WASHER with its position set as shown in the Fig. 2-14-5.

Note4 : Apply GREASE (PG-641) [859D055O30] to the part on the SLIP 2 WASHER specified in the Fig. 2-14-5.

10. Install the SHIFT SLIDER to the SHIFT LEVER shown in the Fig. 2-14-1.

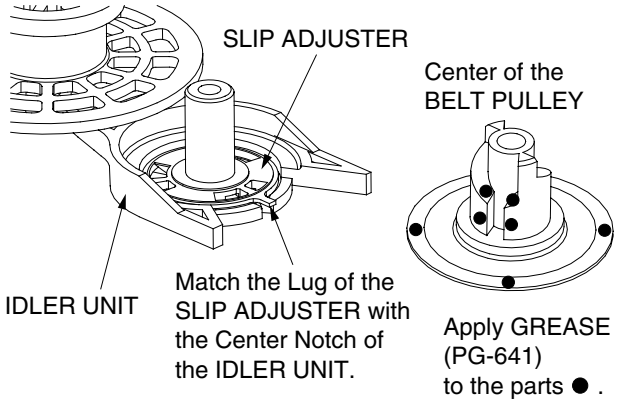


Fig. 2-14-3

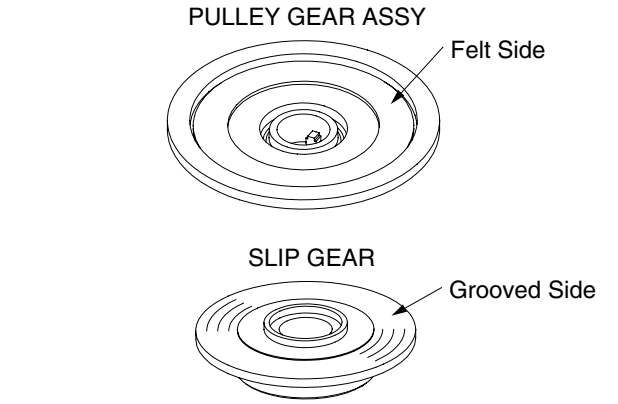


Fig. 2-14-4

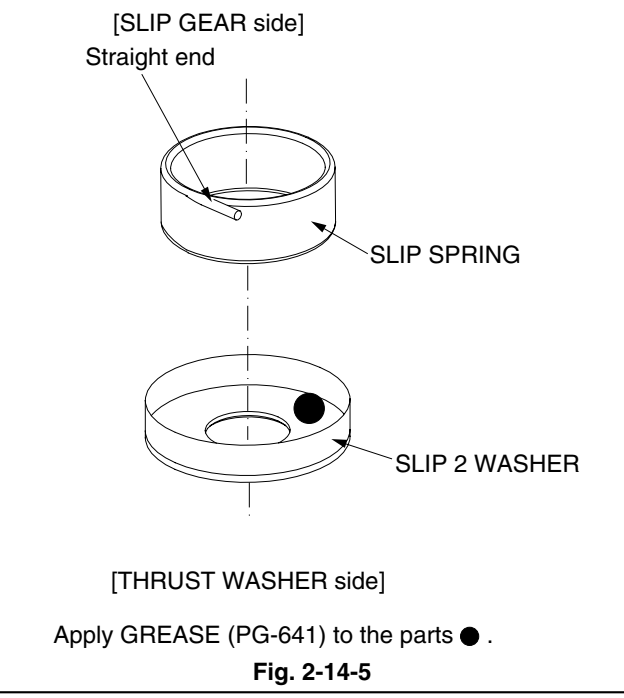


Fig. 2-14-5

2-15. CAPSTAN BRAKE SPRING, CAPSTAN BRAKE ASSY

SET POSITION : Upside down

(Removal)

1. Remove the CAPSTAN BRAKE SPRING shown in the Fig. 2-15.
2. Remove the catch (ⓐ) of the CAPSTAN BRAKE ASSY shown in the Fig. 2-15 to remove the CAPSTAN BRAKE ASSY.

(Installation)

1. Install the CAPSTAN BRAKE ASSY shown in the Fig. 2-15.
2. Install the CAPSTAN BRAKE SPRING shown in the Fig. 2-15.

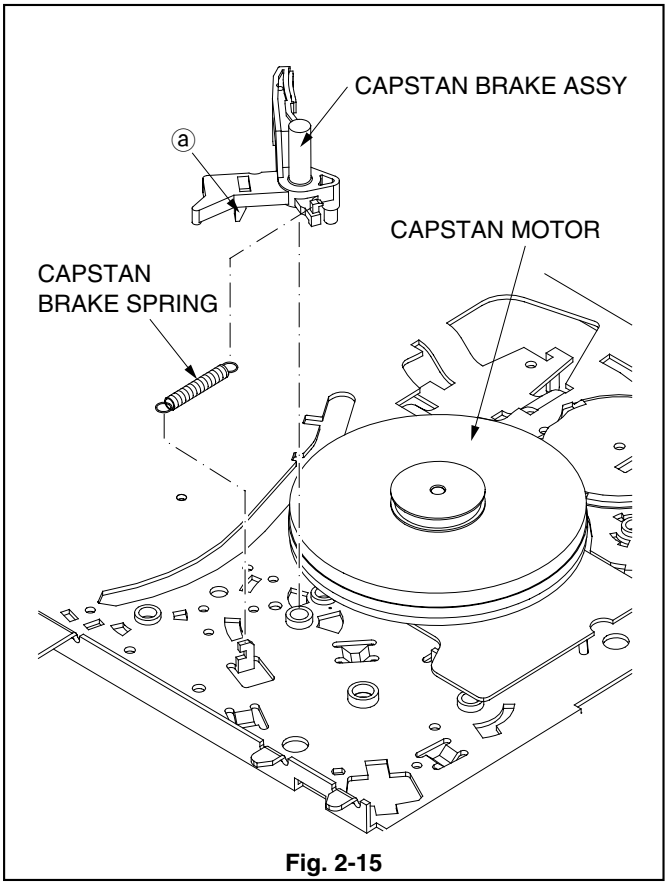


Fig. 2-15

2-16. FC HOLDER, MOTOR HOLDER, LOADING WORM, LOADING MOTOR ASSY, WORM WHEEL

SET POSITION : Normal

(Removal)

1. Release the two catches (ⓐ) of the FC HOLDER shown in the Fig. 2-16-1 to remove the FC HOLDER.
2. Remove the two screws (ⓑ) fastening the MOTOR HOLDER shown in the Fig. 2-16-1 to remove the MOTOR HOLDER.
3. Remove the two screws (ⓒ) fastening the LOADING MOTOR ASSY shown in the Fig. 2-16-1 to remove the LOADING MOTOR ASSY and LOADING WORM.
4. Remove the WORM WHEEL.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the LOADING WORM shown in the Fig. 2-16-2.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the WORM WHEEL shown in the Fig. 2-16-2.
3. Install the WORM WHEEL.
4. Install the LOADING WORM, LOADING MOTOR ASSY to the MOTOR HOLDER.

Note : Tighten the screw (ⓒ) shown in the Fig. 2-16-1 after putting the LUG TERMINAL on the screw.

5. Install the MOTOR HOLDER.
6. Install the FC HOLDER.

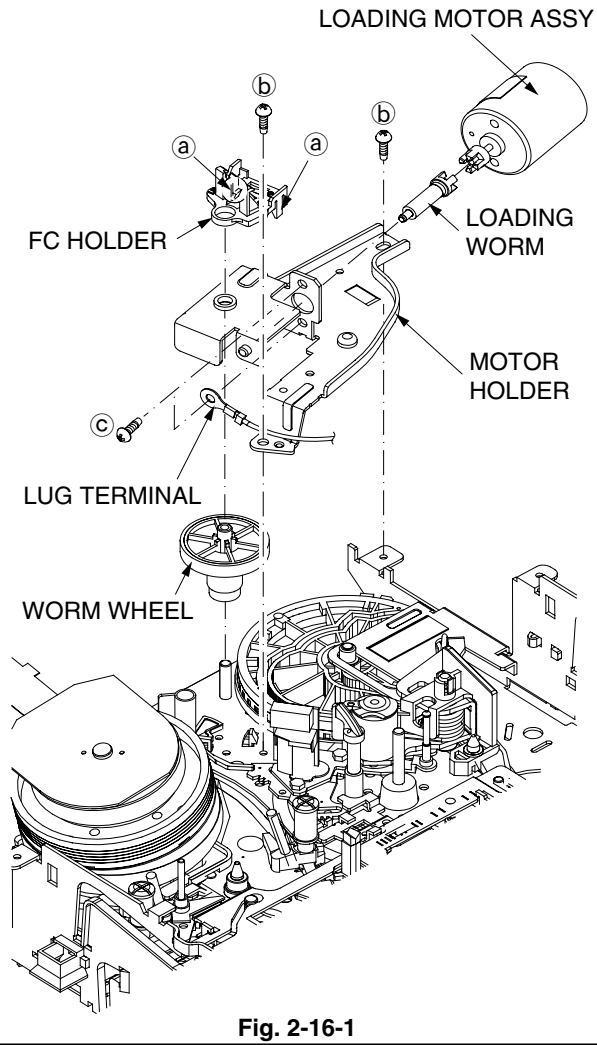
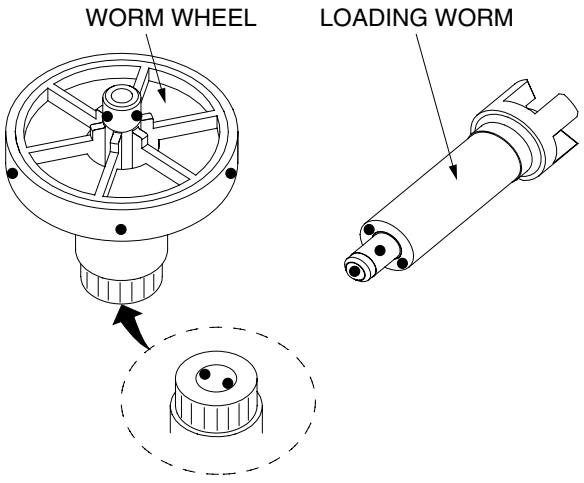


Fig. 2-16-1



Apply GREASE (MULTEMP AC-DM) to the parts ● .

Fig. 2-16-2

2-17. PINCH ARM CAP, PINCH ASSY

SET POSITION : Normal

(Removal)

1. Release the two catches (ⓐ) of the PINCH ARM CAP shown in the Fig. 2-17 to remove the PINCH ARM CAP.
2. Remove the PINCH ASSY shown in the Fig. 2-17.

(Installation)

1. Insert Part Ⓐ of the PINCH ASSY shown in the Fig. 2-17 in the most external groove of the MAIN CAM.
2. Install the PINCH ARM CAP matching the Part Ⓑ of the PINCH ARM CAP with the Rib of the MAIN PLATE ASSY.

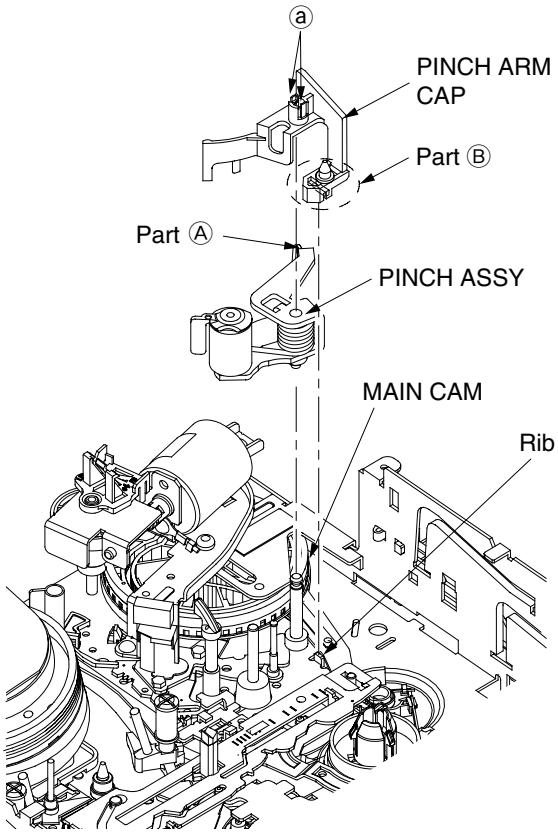


Fig. 2-17

2-18. F/L PLATE, DOOR ARM

SET POSITION : Normal

Remove the following parts before replacing the F/L PLATE, DOOR ARM. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- SENSOR COVER (TU) (Item 2-10)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)

(Removal)

1. Slightly lift the back of the F/L PLATE (MAIN CAM side) shown in the Fig. 2-18-1 to remove the F/L PLATE.
2. Remove the DOOR ARM.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the new F/L PLATE specified in the Fig. 2-18-1.
2. Apply GREASE (MOLYKOTE G PASTE) [859D055O50] to the points on the new F/L PLATE specified in the Fig. 2-18-1.

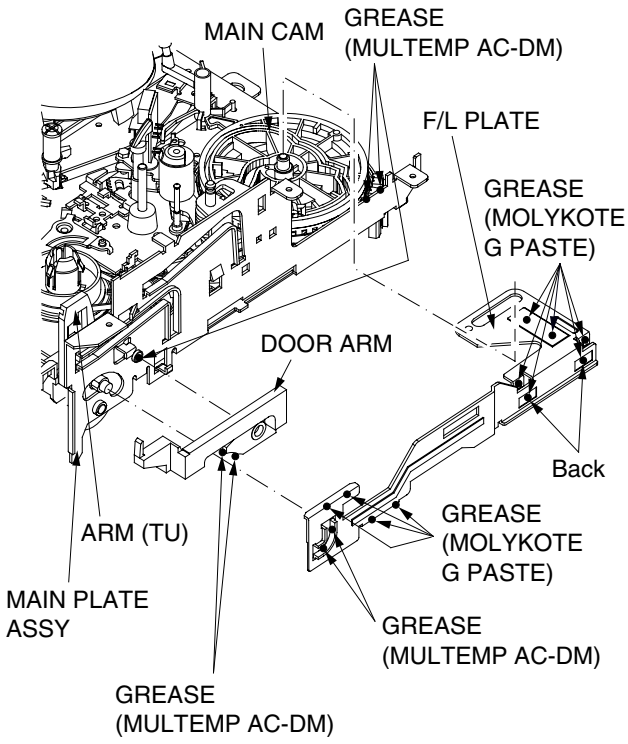


Fig. 2-18-1

3. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the MAIN PLATE ASSY specified in the Fig. 2-18-1.
4. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the DOOR ARM specified in the Fig. 2-18-1.
5. Install the DOOR ARM.
6. Match the Hole in the MAIN CAM with the Hole in the MAIN PLATE ASSY shown in the Fig. 2-18-2.
7. Install the F/L PLATE shown in the Fig. 2-18-1 from the front side (ARM (TU) side).
8. Insert the Boss of the F/L PLATE shown in the Fig. 2-18-2 into the Groove of the MAIN CAM.

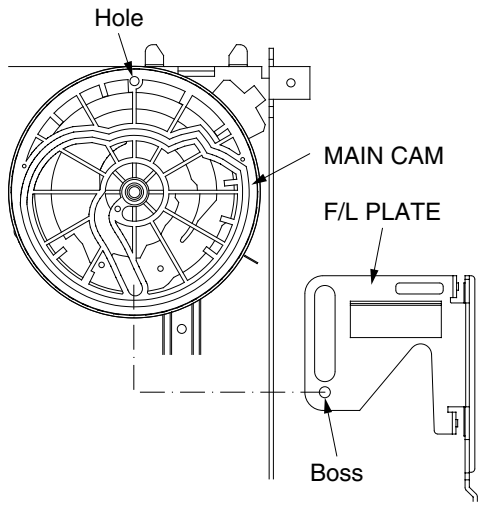


Fig. 2-18-2

2-19. BRAKE CAM PLATE

SET POSITION : Normal

Remove the following parts before replacing the BRAKE CAM PLATE. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)

(Removal)

1. Rotate the MAIN CAM in the Fig. 2-19-1 in the direction shown by the arrow Ⓐ. And move the BRAKE CAM PLATE so that the three catches (ⓐ) of the MAIN PLATE ASSY can be released.
2. Remove the BRAKE CAM PLATE.

(Installation)

1. Apply GREASE (MOLYKOTE G PASTE) [859D055O50] to the points on the BRAKE CAM PLATE specified in the Fig. 2-19-2.
2. Hook the BRAKE SPRING shown in the Fig. 2-19-3 to the catch of the BRAKE (TU).
3. Install the BRAKE CAM PLATE, inserting the six Guide Pins (ⓑ) shown in the Fig. 2-19-1 into the slits of the BRAKE CAM PLATE.
4. Move the BRAKE SPRING in the Fig. 2-19-3 in the direction of the arrow Ⓒ to release the Catch of the BRAKE (TU) and insert the BRAKE SPRING under the Catch.
5. Rotate the MAIN CAM shown in the Fig. 2-19-1 in the direction shown of the arrow Ⓑ. And move the BRAKE CAM PLATE to hook it to the three catches (ⓐ) of the MAIN PLATE ASSY.

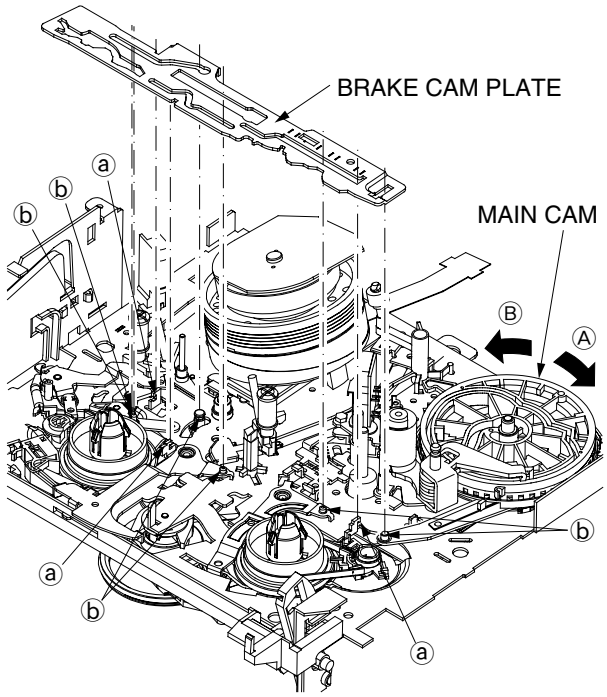
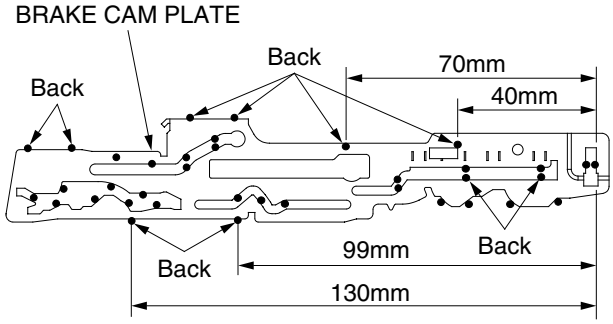


Fig. 2-19-1



Apply GREASE (MOLYKOTE G PASTE) to the points ●.

Fig. 2-19-2

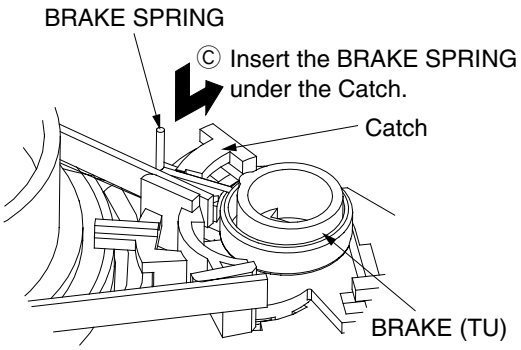


Fig. 2-19-3

2-20. GUIDE LAMP

SET POSITION : Normal

Remove the following parts before replacing the GUIDE LAMP. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)

(Removal)

1. Release the catch (ⓐ) of the GUIDE LAMP shown in the Fig. 2-20.
2. Rotate the GUIDE LAMP in the direction shown by the arrow Ⓐ (counterclockwise, when viewed from the bottom) to match the longest slit (ⓒ) of the MAIN PLATE ASSY with the longest arm (ⓑ) of the GUIDE LAMP shown in the Fig. 2-20. Pull it out downward to remove it.

(Installation)

1. Clean the dirt on the GUIDE LAMP with a VIDEO HEAD cleaning cloth.

Note: Never use solvent such as alcohol to clean the GUIDE LAMP.

2. Insert the GUIDE LAMP in the Fig. 2-20, matching the longest arm (ⓑ) of the GUIDE LAMP with the longest slit (ⓒ) of the MAIN PLATE ASSY.
3. Rotate the GUIDE LAMP in the direction shown by the arrow Ⓑ (clockwise, when viewed from the bottom) to match the arm (ⓐ) of the GUIDE LAMP shown in the Fig. 2-20 with the longest slit (ⓒ) of the MAIN PLATE ASSY.

Note : Clean the dirt on the GUIDE LAMP with a VIDEO HEAD cleaning cloth if necessary.

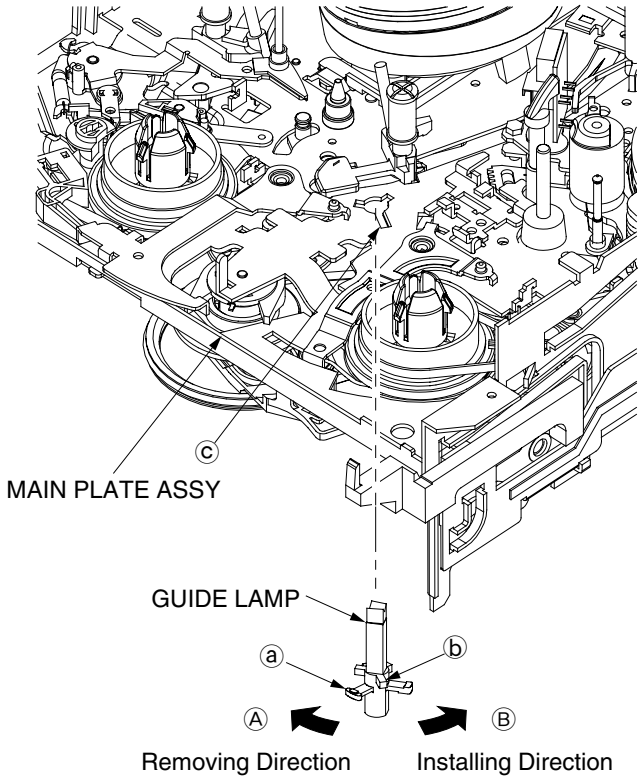


Fig. 2-20

2-21. MAIN CAM, GUIDE ARM (TU), BRAKE LEVER, LB PIN

SET POSITION : Normal

Remove the following parts before replacing the MAIN CAM, GUIDE ARM (TU), BRAKE LEVER. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- SENSOR COVER (TU) (Item 2-10)
- MOTOR HOLDER (Item 2-16)
- WORM WHEEL (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- F/L PLATE (Item 2-18)

(Removal)

1. Remove the MAIN CAM shown in the Fig. 2-21-1.
2. Remove the GUIDE ARM (TU) shown in the Fig. 2-21-1.
3. Move the BRAKE LEVER in the Fig. 2-21-1 in the direction shown by the arrow Ⓐ and release the catch (ⓐ) to remove the BRAKE LEVER.
4. Remove the LB PIN shown in the Fig. 2-21-1.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the new GUIDE ARM (TU) specified in the Fig. 2-21-1.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the MAIN PLATE ASSY specified in the Fig. 2-21-1.
3. Install the GUIDE ARM (TU), matching the Hole in the GUIDE ARM (TU) shown in the Fig. 2-21-2 with the Hole in the MAIN PLATE ASSY.

Note : Install the GUIDE ARM (TU) so that the Part specified with the Oblique Lines of the GUIDE ARM (TU) will be under the SHAFT FLANGE of the PINCH ASSY.

4. Install the BRAKE LEVER shown in the Fig. 2-21-2 so that the Hole in the BRAKE LEVER overlaps the Hole in the MAIN PLATE ASSY.
5. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the points on the new MAIN CAM specified in the Fig. 2-21-3.
6. Install the MAIN CAM so that the Hole in the MAIN CAM shown in the Fig. 2-21-2 overlaps with the Hole in the MAIN PLATE ASSY.

Note : Install the MAIN CAM inserting the Pins of the CAPSTAN BRAKE ASSY, GUIDE ARM (TU), BRAKE LEVER into the Grooves on the back of the MAIN CAM for sure.

Be careful that GREASE does not adhere on the Wall when applying GREASE to the most external circle on the back of the MAIN CAM (4 parts) shown in the Fig. 2-21-3.

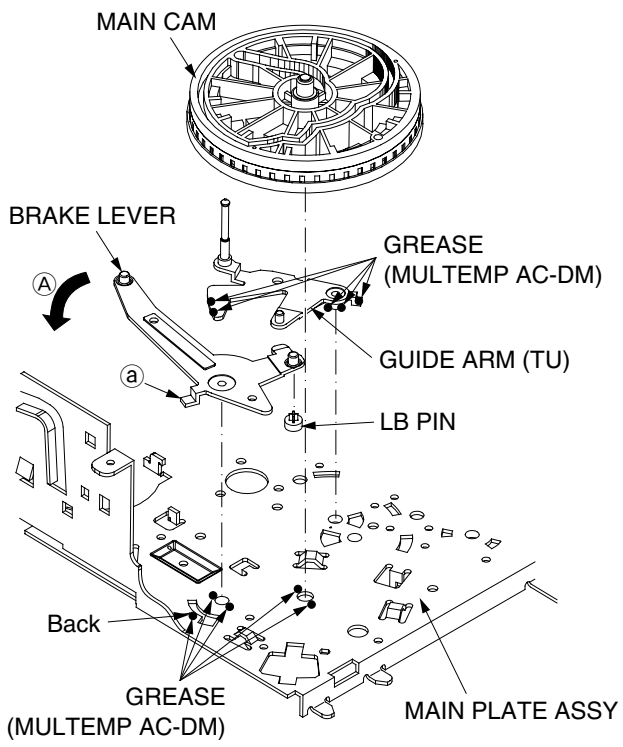


Fig. 2-21-1

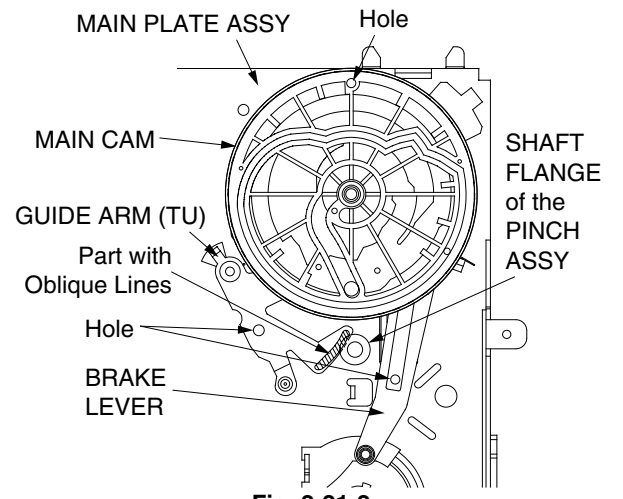
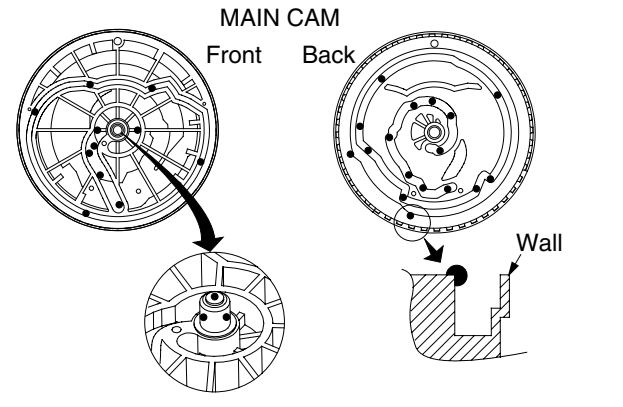


Fig. 2-21-2



Apply GREASE (MULTEMP AC-DM) to the parts ●.

Fig. 2-21-3

2-22. L/D LOCK LEVER

SET POSITION : Normal

Remove the following parts before replacing the L/D LOCK LEVER. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)

(Removal)

1. Remove the L/D LOCK LEVER shown in the Fig. 2-22.

(Installation)

1. Install the L/D LOCK LEVER shown in Fig. 2-22.

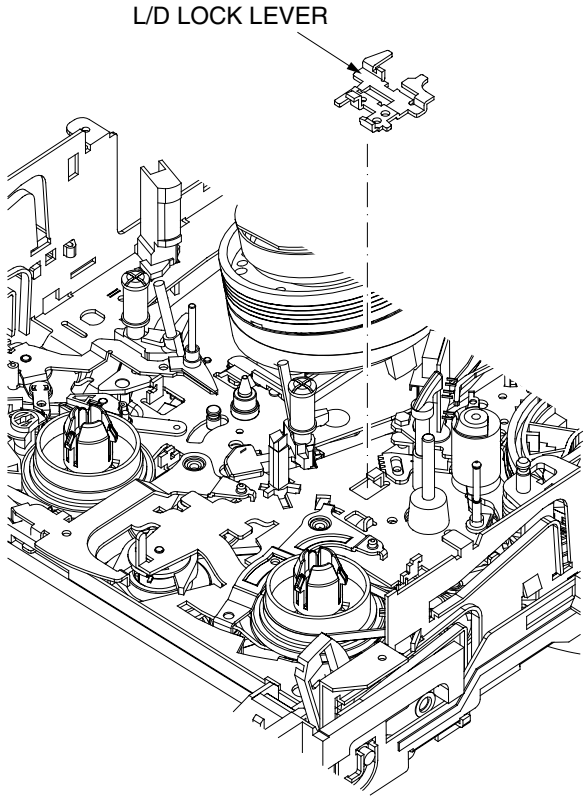


Fig. 2-22

2-23. BRAKE BELT (SP), BELT HOLDER

SET POSITION : Normal

Remove the following parts before replacing the BRAKE BELT (SP), BELT HOLDER. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)

(Removal)

1. Lift the BRAKE BELT (SP) shown in the Fig. 2-23 to remove it from the REEL DISK (SP side).
2. Release the BRAKE BELT (SP) from the catch (ⓐ) of the BELT LEVER shown in the Fig. 2-23.
3. Release the two catches (ⓑ) of the BELT HOLDER shown in the Fig. 2-23 and separate the BELT HOLDER from the BRAKE BELT (SP).
4. Release the catch (ⓒ) of the BELT HOLDER shown in the Fig. 2-23 to remove the BRAKE BELT (SP).

(Installation)

Note : Install the BRAKE BELT (SP) so that its Felt Side touches the REEL DISK (SP side). GREASE applied to the BRAKE CAM PLATE and MAIN PLATE ASSY should not adhere on the Felt Side of the BRAKE BELT (SP).

1. Install the BRAKE BELT (SP) shown in the Fig. 2-23 to the catch (ⓒ) of the BELT HOLDER.
2. Install the BELT HOLDER shown in the Fig. 2-23.
3. Install the BRAKE BELT (SP) shown in the Fig. 2-23 to the catch (ⓐ) of the BELT LEVER.
4. Hook the BRAKE BELT (SP) shown in the Fig. 2-23 to the REEL DISK (SP side).

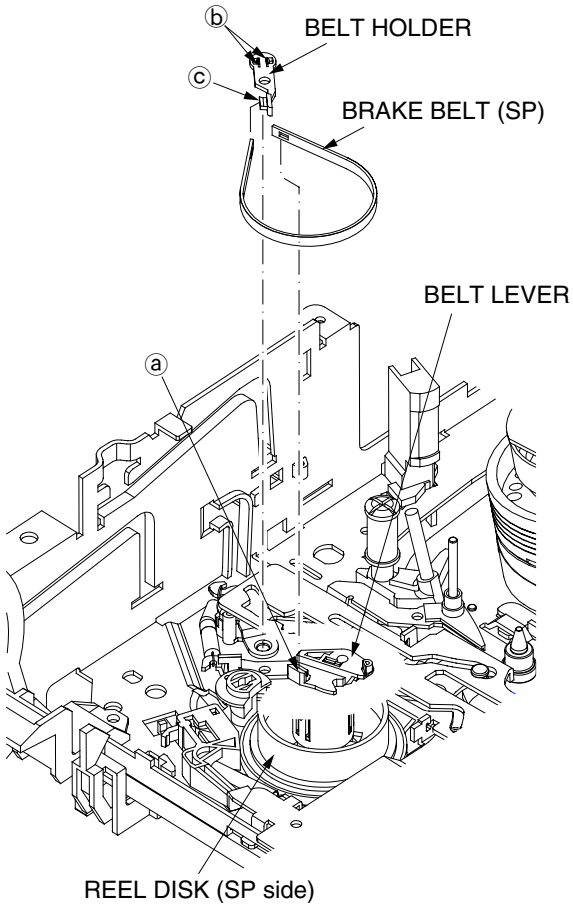


Fig. 2-23

2-24. BELT LEVER, BELT ADJUSTER

SET POSITION : Normal

Remove the following parts before replacing the BELT LEVER, BELT ADJUSTER. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)
- BRAKE BELT (SP) (Item 2-23)
- BELT HOLDER (Item 2-23)

(Removal)

1. Release the catch (ⓐ) of the BELT LEVER shown in the Fig. 2-24 to remove the BELT LEVER.
2. Remove the BELT ADJUSTER shown in the Fig. 2-24.

(Installation)

1. Install the BELT ADJUSTER shown in the Fig. 2-24.
2. Install the BELT LEVER shown in the Fig. 2-24.

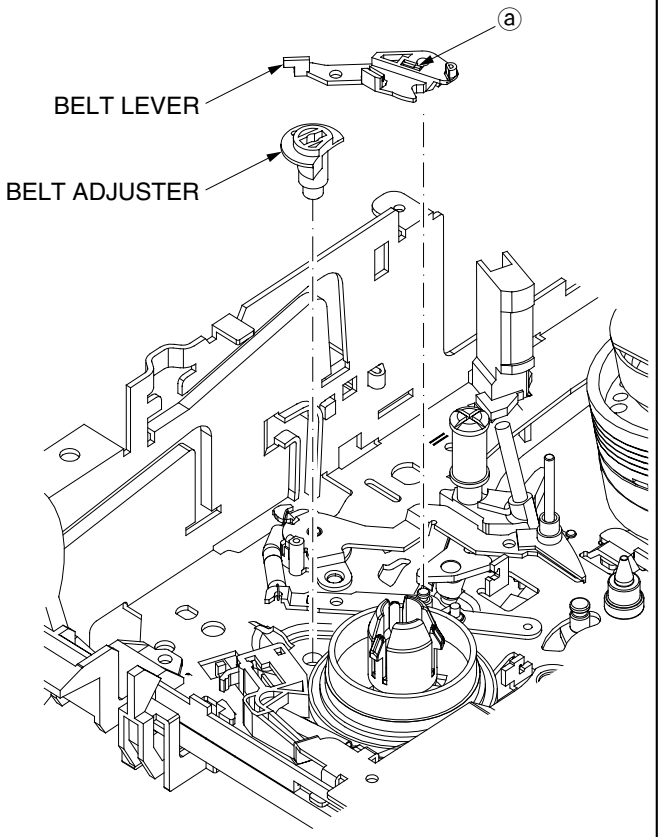


Fig. 2-24

2-25 TENSION ARM, TENSION LEVER, TENSION SPRING, TENS AXIS HOLDER, REEL DISK (SP side)

SET POSITION : Normal

Remove the following parts before performing this Item. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)
- BRAKE BELT (SP) (Item 2-23)
- BELT HOLDER (Item 2-23)
- BELT LEVER (Item 2-24)

(Removal)

1. Remove the TENSION SPRING shown in the Fig. 2-25.
2. Release the catch (ⓐ) of the TENS AXIS HOLDER shown in the Fig. 2-25 to remove the TENSION ARM.
3. Remove the TENSION LEVER shown in the Fig. 2-25.
4. Release the catch (ⓑ) of the TENS AXIS HOLDER shown in the Fig. 2-25. Move the TENS AXIS HOLDER in the direction shown by the arrow Ⓐ to remove it.
5. Remove the REEL DISK (SP side).

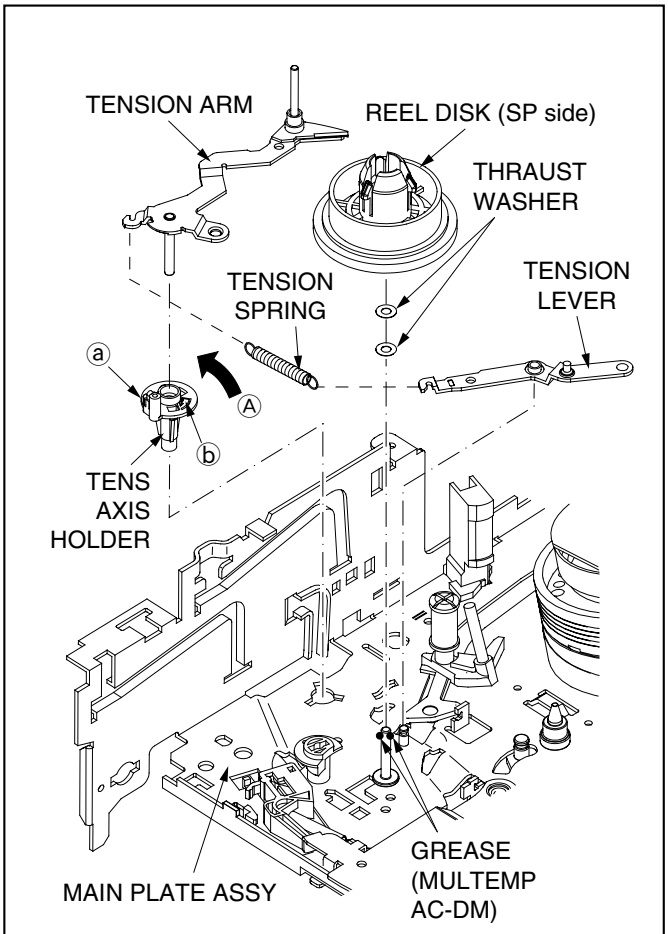


Fig. 2-25

(Installation)

1. Apply OIL (FLOIL 948P) [859D154O20] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-25.
2. Install the REEL DISK (SP side).
3. Install the TENS AXIS HOLDER.

Note : Install the TENS AXIS HOLDER so that the catch (ⓐ) for the TENSION ARM will be positioned on the front (F/L ARM ASSY side).

4. Install the TENSION LEVER.
5. Install the TENSION ARM.
6. Install the TENSION SPRING.

Note : Install the longer hook of the TENSION SPRING to the TENSION ARM.

2-26. BRAKE BELT (TU)

SET POSITION : Normal

Remove the following parts before replacing the BRAKE BELT. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)

(Removal)

1. Lift the BRAKE BELT (TU) shown in the Fig. 2-26 to remove it from the REEL DISK (TU side).
2. Release the two catches (ⓐ) of the BRAKE (TU) shown in the Fig. 2-26 to remove the BRAKE BELT (TU).

(Installation)

1. Install the BRAKE BELT (TU) shown in the Fig. 2-26 to the BRAKE (TU).
2. Hook the BRAKE BELT (TU) shown in the Fig. 2-26 to the REEL DISK (TU side).

Note : Install the BRAKE BELT (TU) so that its Felt Side touches the REEL DISK (TU side).

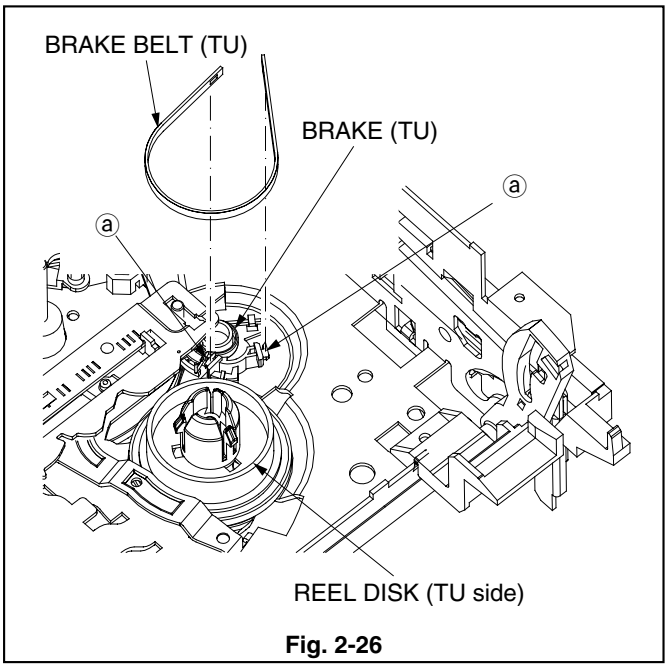


Fig. 2-26

2-27. BRAKE (TU), REEL DISK (TU side)

SET POSITION : Normal

Remove the following parts before replacing the BRAKE (TU), REEL DISK (TU side). Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)

(Removal)

1. Move the BRAKE (TU) in the Fig. 2-27 in the direction shown by the arrow Ⓐ to remove it.
2. Remove the BRAKE BELT (TU) from the BRAKE (TU).
3. Remove the REEL DISK (TU).

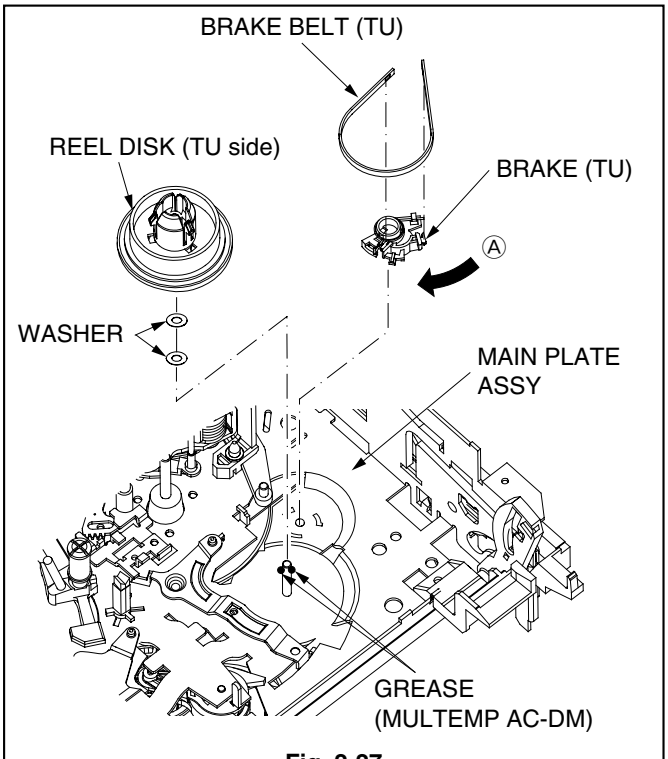


Fig. 2-27

(Installation)

Note : Install the BRAKE BELT (TU) so that its Felt Side touches the REEL DISK (TU side).
The GREASE applied to the BRAKE CAM PLATE and the MAIN PLATE ASSY should not adhere on the Felt Side of the BRAKE BELT (SP).

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-27.
2. Install the REEL DISK (TU side).
3. Install the BRAKE BELT (TU) to the BRAKE (TU).
4. Install the BRAKE (TU).
5. Hook the BRAKE BELT (TU) to the REEL DISK (TU side).

2-28. SHIFT LEVER

SET POSITION : Normal

Remove the following parts before replacing the SHIFT LEVER. Refer to the corresponding items to install them.

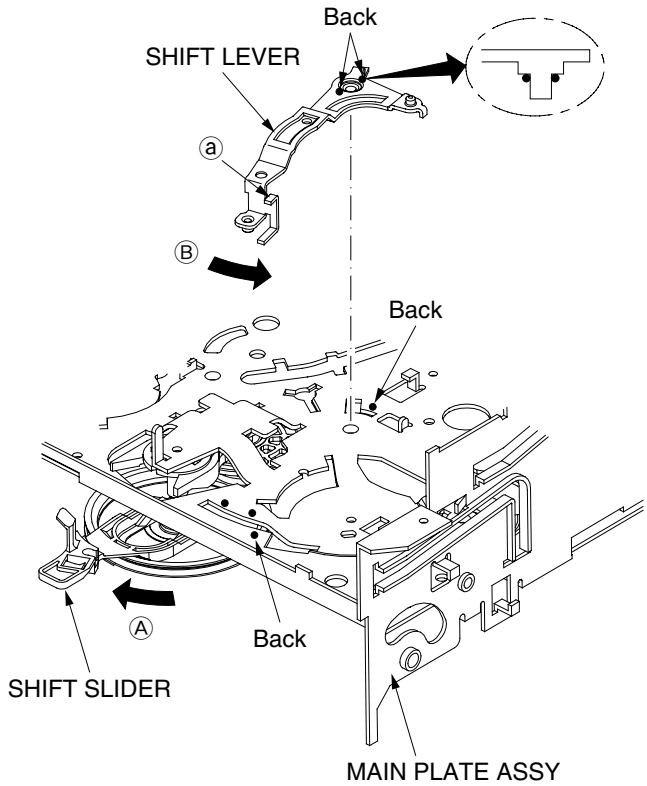
- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)
- BRAKE (TU) (Item 2-27)
- REEL DISK (TU side) (Item 2-27)

(Removal)

1. Move the SHIFT SLIDER in the Fig. 2-28 in the direction shown by the arrow Ⓐ to release it from the SHIFT LEVER.
2. Move the SHIFT LEVER in the Fig. 2-28 in the direction shown by the arrow Ⓑ to remove it.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the new SHIFT LEVER specified in the Fig. 2-28.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-28.
3. Install the SHIFT LEVER so that its Part (ⓐ) shown in the Fig. 2-28 will be positioned under the MAIN PLATE ASSY.
4. Install the SHIFT SLIDER to the SHIFT LEVER.



Apply GREASE (MULTEMP AC-DM) to the parts ● .

Fig. 2-28

2-29. CHARGE SPRING, SWING LEVER, CHARGE ASSY

SET POSITION : Normal

Remove the following parts before replacing the CHARGE SPRING, SWING LEVER, CHARGE ASSY. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)

(Removal)

1. Remove the CHARGE SPRING shown in the Fig. 2-29 from the SWING LEVER.
2. Remove the SWING LEVER shown in the Fig. 2-29.
3. Release the Part ⓐ of the CHARGE ASSY shown in the Fig. 2-29 from the Part ⓑ of the MAIN PLATE ASSY to remove the CHARGE ASSY.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-29.
2. Install the CHARGE ASSY.
3. Install the SWING LEVER inserting the Part ⓒ of the SWING LEVER in the Fig. 2-29 into the groove in the MAIN PLATE ASSY.
4. Install the CHARGE SPRING to the SWING LEVER.

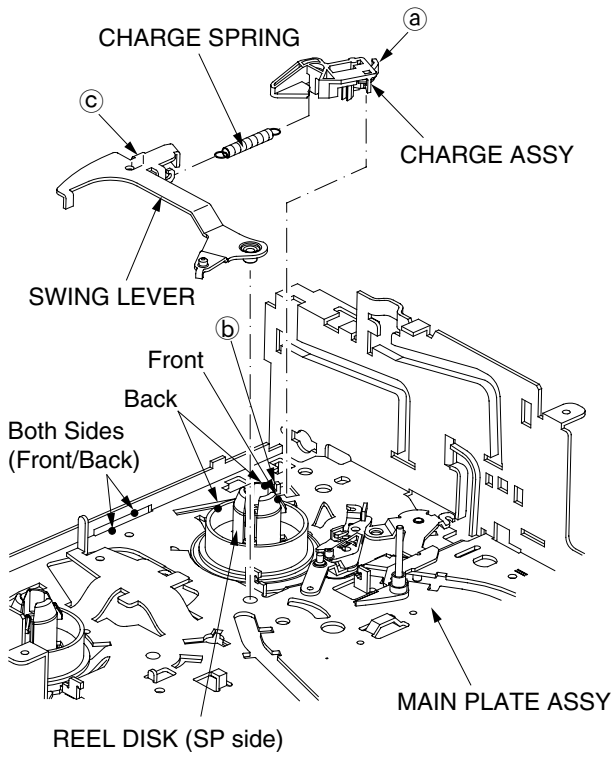


Fig. 2-29

2-30. LOADING ARM ASSY (SP), LOADING ARM ASSY (TU)

SET POSITION : Upside down

(Removal)

1. Release the catch (ⓐ) of the LOADING ARM ASSY (SP) shown in the Fig. 2-30-1 to remove the LOADING ARM ASSY (SP).

Note : Be sure to replace the removed LOADING ARM ASSY (SP) with a new one.

2. Remove the screw (ⓑ) fastening the SPACER PLATE shown in the Fig. 2-30-1 to remove the SPACER PLATE.
3. Remove the LOADING ARM ASSY (TU) shown in the Fig. 2-30-1.

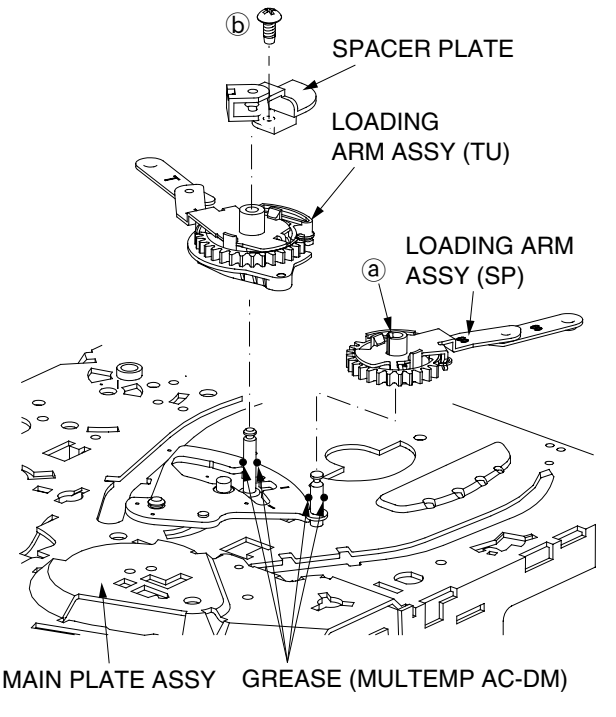
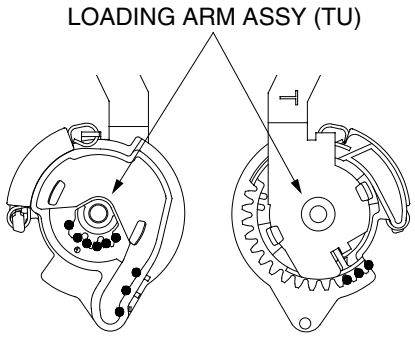


Fig. 2-30-1

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-30-1.
2. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the LOADING ARM ASSY (TU) specified in the Fig. 2-30-2.
3. Install the LOADING ARM ASSY (SP) and LOADING ARM ASSY (TU) so that the Marks on the both UNITs face each other, as shown in the Fig. 2-30-3.

Note : Be sure to replace the removed LOADING ARM ASSY (SP) with a new one.



Apply GREASE (MULTEMP AC-DM) to the parts ●.

Fig. 2-30-2

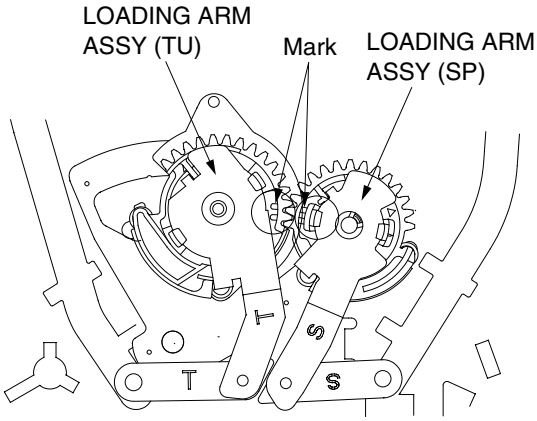


Fig. 2-30-3

2-31. A/L LEVER

SET POSITION: Upside down

Remove the following parts before replacing the A/L LEVER. Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)
- LOADING ARM ASSY (SP) (Item 2-30)
- LOADING ARM ASSY (TU) (Item 2-30)

(Removal)

1. Remove the CUT WASHER and WASHER shown in the Fig. 2-31-1. Then, remove the A/L LEVER.

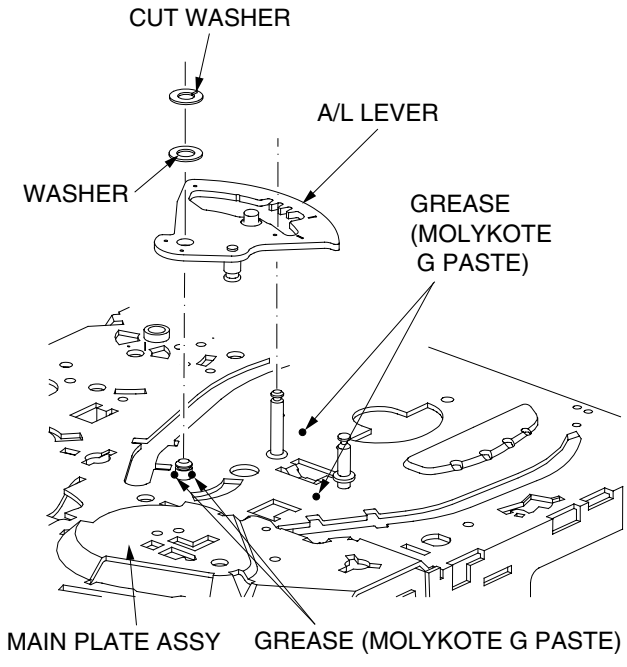


Fig. 2-31-1

(Installation)

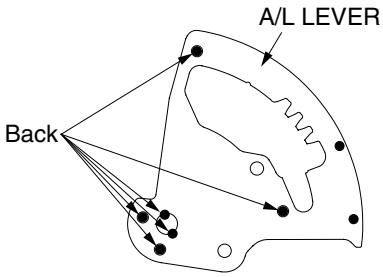
Note : Install the LOADING ARM ASSY (TU) and LOADING ARM ASSY (SP), according to the following procedure, after installing the A/L LEVER.

1. Apply GREASE (MOLYKOTE G PASTE) [859D055O50] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-31-1.
2. Apply GREASE (MOLYKOTE G PASTE) [859D055O50] to the parts on the A/L LEVER specified in the Fig. 2-31-2.
3. Install the A/L LEVER so that the Mark on the A/L LEVER faces to the FLANGE of the LOADING ARM ASSY (SP), as shown in the Fig. 2-31-3.

Note : The Part specified with Oblique Lines on the A/L LEVER should be under the FLANGE of the LOADING ARM ASSY (SP).

4. Install the LOADING ARM ASSY (TU) so that the Marks on the LOADING ARM ASSY (TU) and on the A/L LEVER will face each other, as shown in the Fig. 2-31-4.
5. Install the LOADING ARM ASSY (SP) so that the ▲ mark on the LOADING ARM ASSY (SP) and the Reinforcement Rib of the LOADING ARM ASSY (TU) will face each other, as shown in the Fig. 2-31-4.

Note : Be sure to replace the removed LOADING ARM ASSY (SP) with a new one.



Apply GREASE (MOLYKOTE G PASTE) to the parts ● .

Fig. 2-31-2

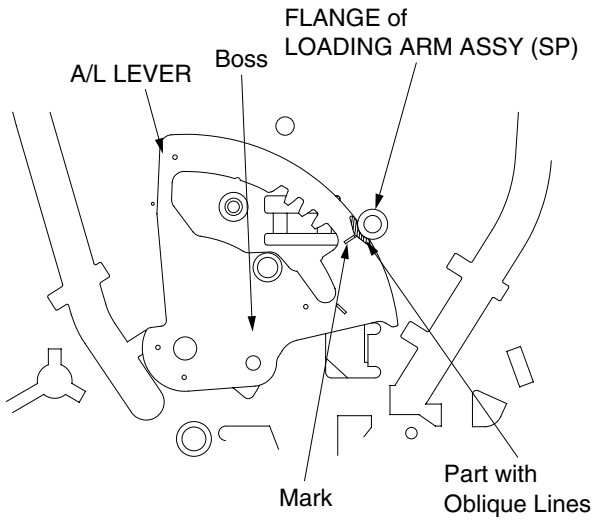


Fig. 2-31-3

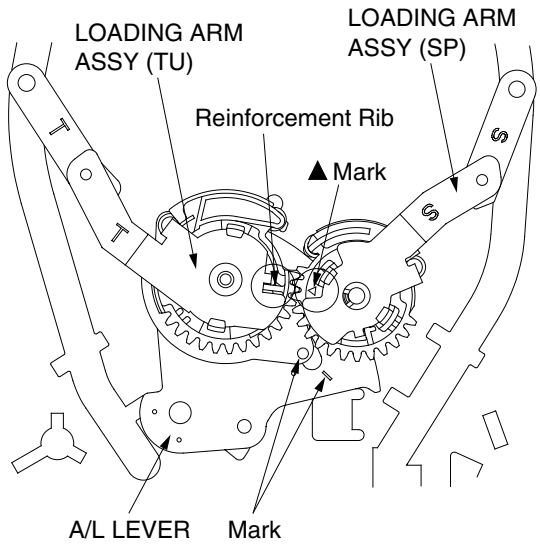


Fig. 2-31-4

2-32. TAPE GUIDE ASSY (SP), TAPE GUIDE ASSY (TU)

SET POSITION : Normal

Remove the following parts before replacing the TAPE GUIDE ASSY (SP), (TU). Refer to the corresponding items to install them.

- STAY PLATE (Item 2-2)
- BOTTOM ASSY (Item 2-3)
- MOTOR HOLDER (Item 2-16)
- PINCH ARM CAP (Item 2-17)
- PINCH ASSY (Item 2-17)
- BRAKE CAM PLATE (Item 2-19)
- BRAKE BELT (SP) (Item 2-23)
- BELT HOLDER (Item 2-23)
- BELT LEVER (Item 2-24)
- TENSION ARM (Item 2-25)

(Removal)

1. Loosen the TAPE GUIDE ASSY (SP) shown in the Fig. 2-32-1 (turn it fully in the Unloading direction) to remove it.
2. Loosen the TAPE GUIDE ASSY (TU) shown in the Fig. 2-32-1 (turn it fully in the Unloading direction) to remove it.

(Installation)

1. Apply GREASE (MULTEMP AC-DM)[859D055O90] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-32-2.
2. Install the TAPE GUIDE ASSY (SP) shown in the Fig. 2-32-1.
3. Install the TAPE GUIDE ASSY (TU) shown in the Fig. 2-32-1.
4. Perform the Item 3-2-1. "GUIDE ROLLER Check" to the Item 3-2-5. "Flatness Check of FM Waveform" of the "Interchangeability Adjustment of the Mechanism".

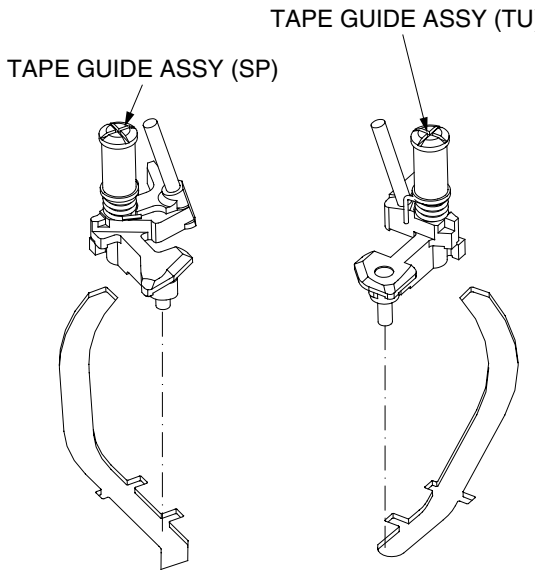
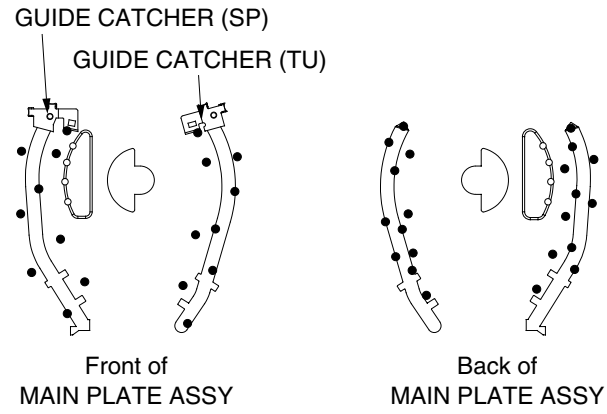


Fig. 2-32-1



Apply GREASE (MULTEMP AC-DM) to the parts ● .

Fig. 2-32-2

2-33. DRUM CLAMPER, DRUM ASSY

SET POSITION : Normal

(Removal)

1. Disconnect the LEAD CONNECTOR of the DRUM ASSY shown in the Fig. 2-33-1.
2. Remove the two screws (ⓐ, ⓑ) fastening the DRUM CLAMPER shown in the Fig. 2-33-1 to remove the DRUM ASSY with the DRUM CLAMPER.
3. Rotate the DRUM CLAMPER in the Fig. 2-33-2 in the direction shown by the arrow Ⓐ to remove it from the DRUM ASSY.

(Installation)

1. Install the DRUM CLAMPER in the Fig. 2-33-2 to the DRUM ASSY by rotating it in the direction shown of the arrow Ⓑ.
2. Hook the Catch of the DRUM CLAMPER shown in the Fig. 2-33-3 to the Reference Pin.
3. Fasten the screw (ⓑ) while pushing the Part Ⓐ in the direction shown by the arrow Ⓒ (clockwise when viewed from the top) as shown in the Fig. 2-33-3.

Note : Confirm at this time that the Catch of the DRUM CLAMPER touches the side of the Reference Pin.

4. Fasten the screw (ⓐ) shown in the Fig. 2-33-3.

Note : Confirm at this time that the Catch of the DRUM CLAMPER touches the side of the Reference Pin.

5. Connect the LEAD CONNECTOR of the DRUM ASSY with the DRUM CLAMPER shown in the Fig. 2-33-1.
6. Connect the LEAD CONNECTOR of the DRUM ASSY shown in the Fig. 2-33-1.
7. Perform the Item "PLAYBACK Switching Point" of the "Circuit Adjustment" in this service manual.
8. Perform the Item "Interchangeability Adjustment of the Mechanism".
9. Clean the DRUM ASSY shown in the Fig. 2-33-1 with alcohol.

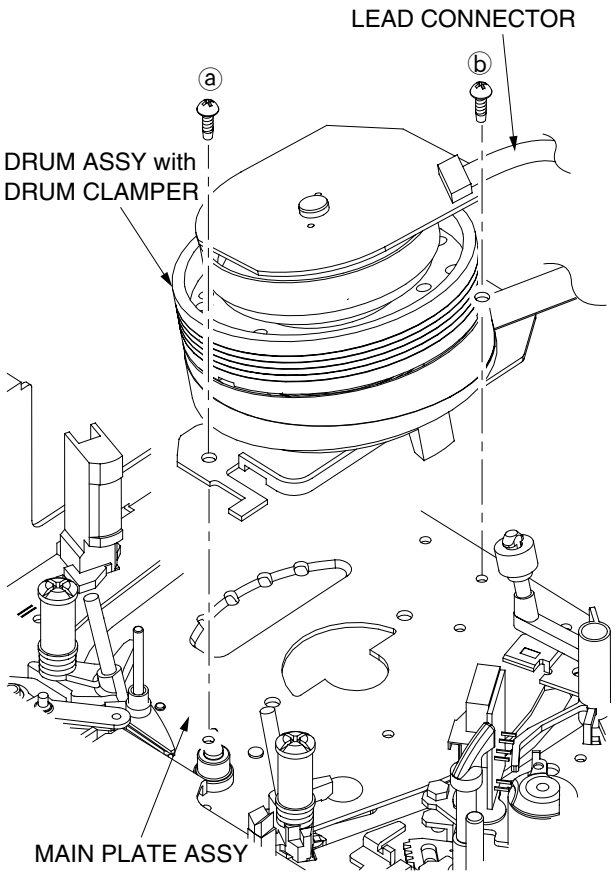


Fig. 2-33-1

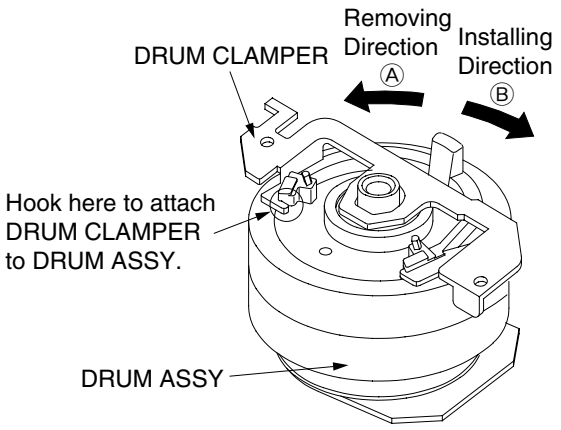


Fig. 2-33-2

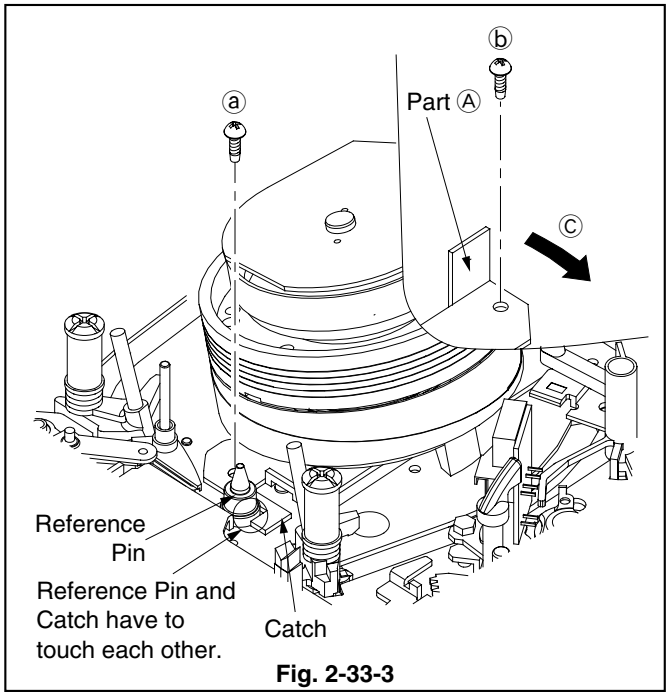


Fig. 2-33-3

2-34. DRUM MOTOR STATOR, BRUSH SPRING, SPACER, ROTOR CASE, END RING, BRUSH, UPPER DRUM ASSY

SET POSITION : Normal

(Removal)

1. Disconnect the LEAD CONNECTOR of the DRUM ASSY shown in the Fig. 2-34-1.
2. Remove the two screws (ⓐ) fastening the DRUM MOTOR STATOR shown in the Fig. 2-34-1 to remove the DRUM MOTOR STATOR.
3. Remove the two screws (ⓑ) fastening the ROTOR CASE shown in the Fig. 2-34-1 to remove the ROTOR CASE.

Note : Mark on the END RING and UPPER DRUM ASSY shown in the Fig. 2-34-1 using a pen, etc. for convenience in installing them.

4. Loosen the hexagon screw (ⓒ) fastening the END RING shown in the Fig. 2-34-1 to remove the END RING.
5. Remove the BRUSH SPRING shown in the Fig. 2-34-1.
6. Remove the BRUSH shown in the Fig. 2-34-1.
7. Remove the UPPER DRUM ASSY shown in the Fig. 2-34-1.
8. Remove the SPACER shown in the Fig. 2-34-1.

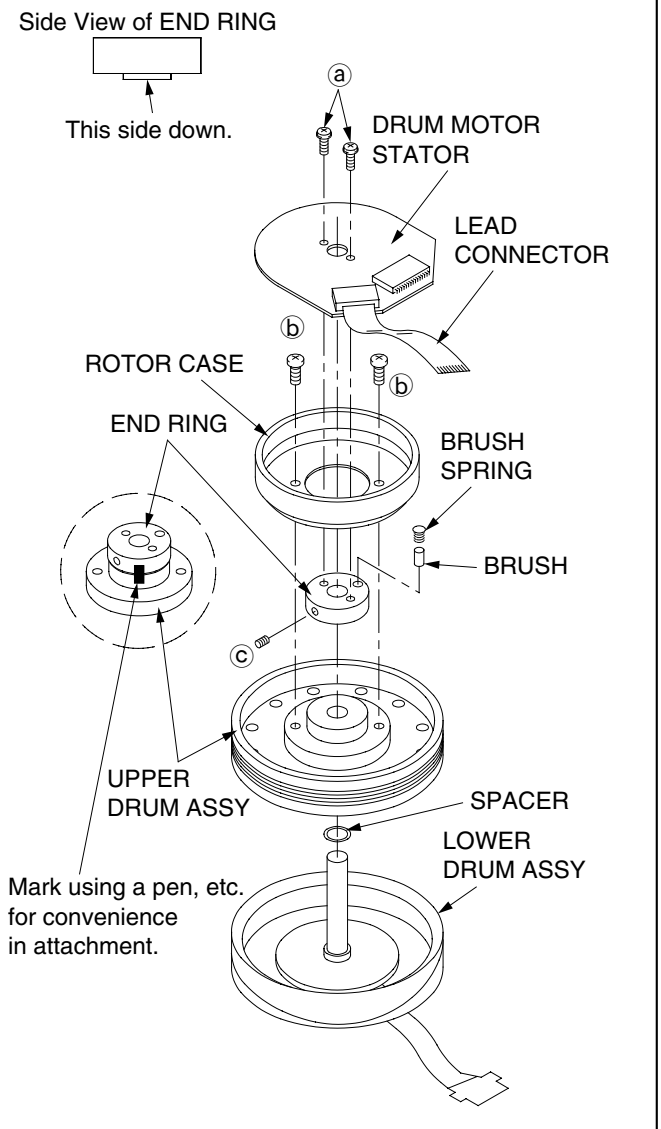


Fig. 2-34-1

(Installation)

1. Install the SPACER shown in the Fig. 2-34-1.

Note : Be sure to use the new SPACER packed with the new UPPER DRUM ASSY.

2. Install the UPPER DRUM ASSY shown in the Fig. 2-34-1.
3. Install the END RING so that the reference hole (Ⓐ) of the END RING shown in the Fig. 2-34-2 will be placed in parallel with the Rear Line of the MAIN PLATE ASSY. (The reference hole (Ⓐ) should be on the right when viewed from the bottom.)
4. Apply the screw-sealing agent to the hexagon screw (ⓒ) fastening the END RING shown in the Fig. 2-34-1.
5. Install the ROTOR CASE shown in the Fig. 2-34-3, matching its Holes with the three reference holes (Ⓑ) of the UPPER DRUM ASSY.
6. Install the BRUSH shown in the Fig. 2-34-1.
7. Install the BRUSH SPRING shown in the Fig. 2-34-1.
8. Install the DRUM MOTOR STATOR shown in the Fig. 2-34-1.
9. Connect the LEAD CONNECTOR of the DRUM ASSY shown in the Fig. 2-34-1.
10. Perform the Item "PLAYBACK Switching Point" adjustment.
11. Perform the Item "Interchangeability Adjustment of the Mechanism".
12. Clean the DRUM ASSY with alcohol.

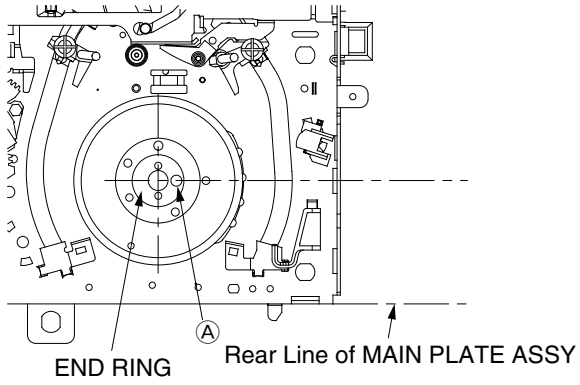


Fig. 2-34-2

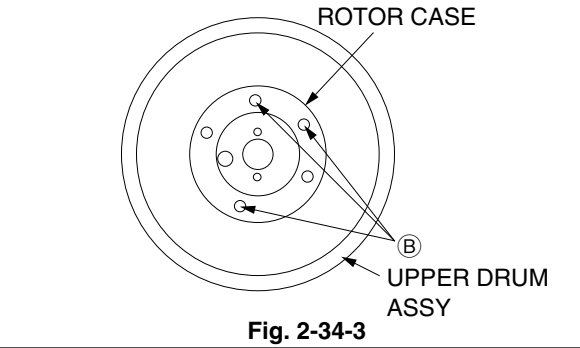


Fig. 2-34-3

2-35. CAPSTAN MOTOR

SET POSITION : Normal

Remove the following part before replacing the CAPSTAN MOTOR. Refer to the corresponding item to install it.

- REEL BELT (Item 2-14.)

(Removal)

1. Rotate the WORM WHEEL in the Fig. 2-35-1 in the direction shown by the arrow Ⓐ to release the Hooks of the BOTTOM ASSY from the Locks of the STAY PLATE.
2. Rotate the WORM WHEEL in the Fig. 2-35-2 in the direction shown by the arrow Ⓐ so that the GUIDE ARM (TU) moves in the direction of arrow Ⓑ and expose the three screws (ⓐ) fastening the CAPSTAN MOTOR.
3. Remove the three screws (ⓐ) fastening the CAPSTAN MOTOR shown in the Fig. 2-35-2 to remove the CAPSTAN MOTOR.

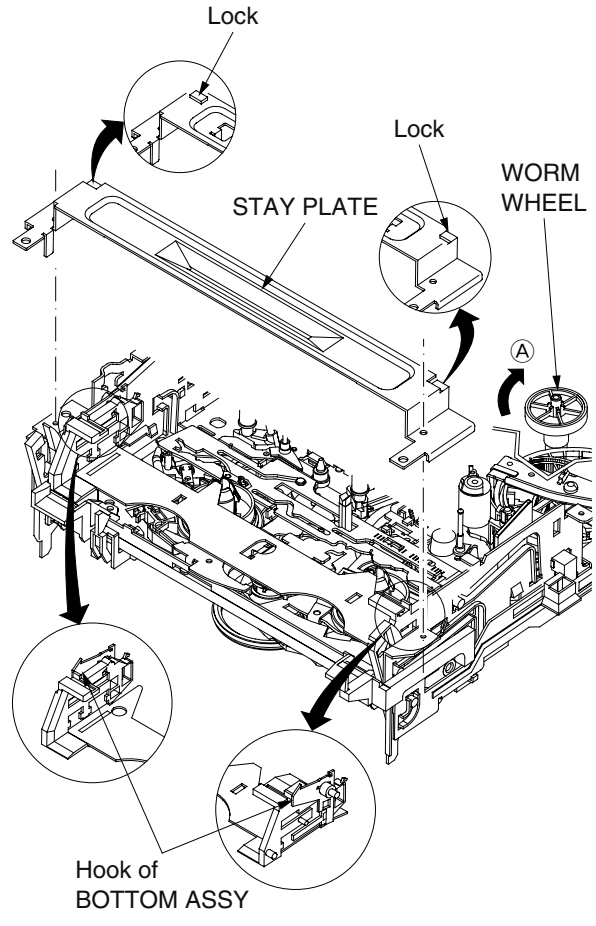


Fig. 2-35-1

(Installation)

1. Apply SILICON COMPOUND (SC102) [859D164O10] to the parts on the MAIN PLATE ASSY specified in the Fig. 2-35-3.
2. Install the CAPSTAN MOTOR.

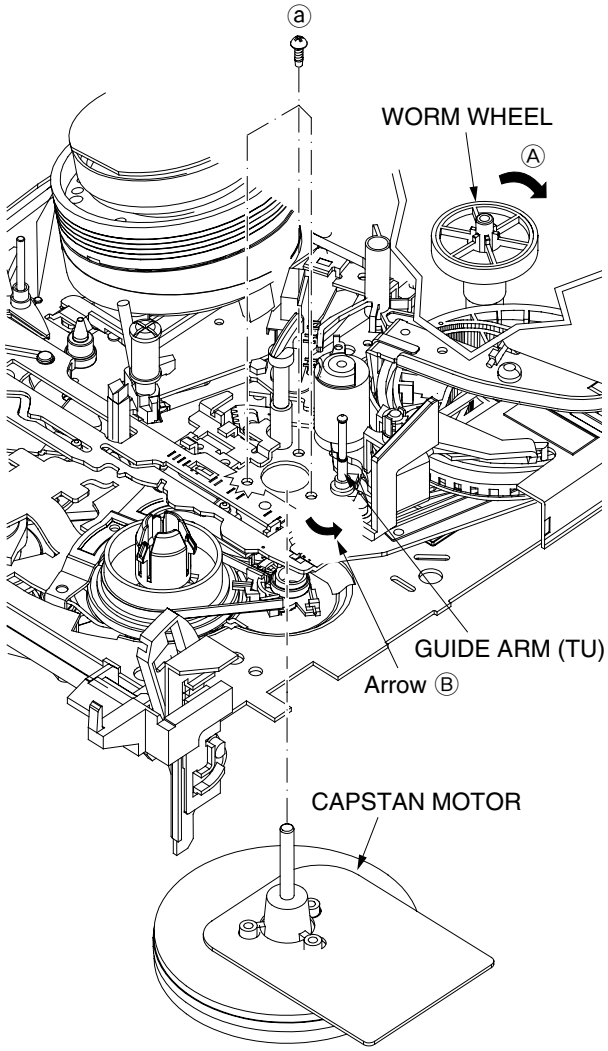


Fig. 2-35-2

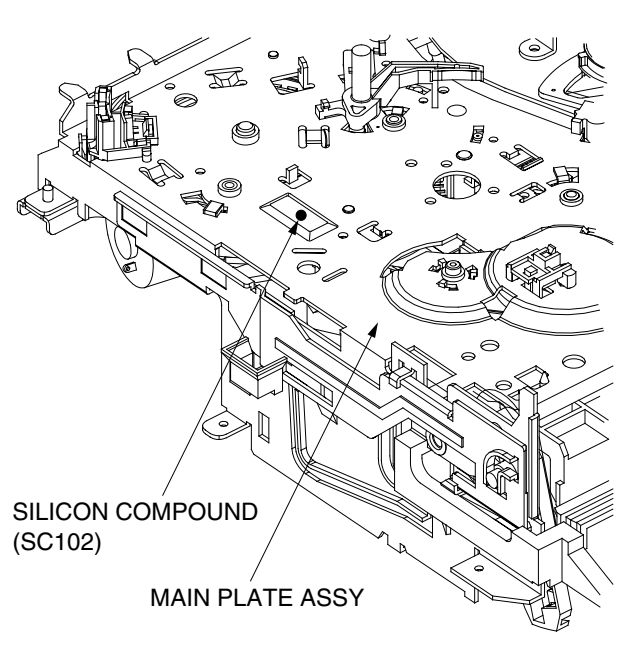


Fig. 2-35-3

2-36. IMPEDANCE UNIT (SP), FLYWHEEL (SP)

SET POSITION : Normal

(Removal)

1. Unfasten the two catches (ⓐ) on the IMPEDANCE UNIT (SP) shown in Fig. 2-36, and remove the FLYWHEEL (SP).
2. Remove the screw (ⓑ) on the IMPEDANCE UNIT (SP) shown in Fig. 2-36, and remove the IMPEDANCE UNIT (SP).

(Installation)

1. Install the IMPEDANCE UNIT (SP) shown in Fig. 2-36.
2. Install the FLYWHEEL (SP) shown in Fig. 2-36.

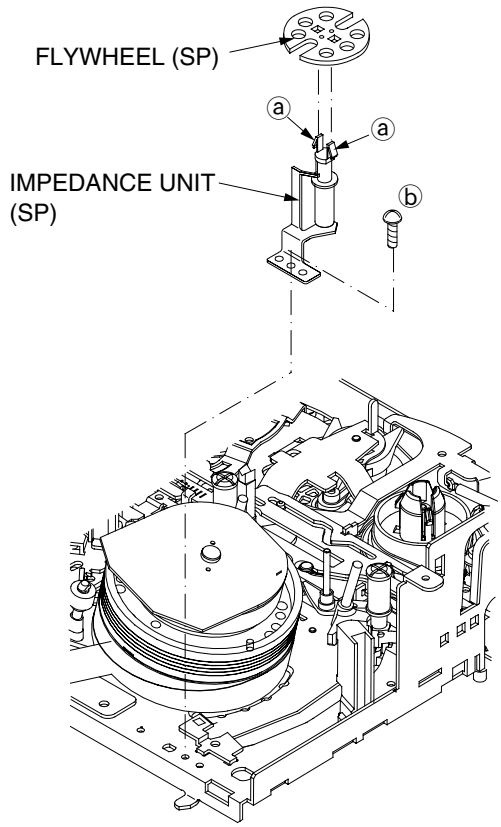


Fig. 2-36

2-37. SSW HOLDER, SSW SLIDER

SET POSITION : Upside down

To access the SSW UNIT, remove the following parts :

- STAY PLATE (Para. 2-2)
- BOTTOM ASSY (Para. 2-3)

(Removal)

1. Remove the SSW SLIDER shown in the Fig. 2-37 .
2. Unfasten the two catches (ⓐ) shown in Fig. 2-37, and remove the SSW HOLDER.

(Installation)

1. Install the SSW HOLDER shown in Fig. 2-37.
2. Install the SSW SLIDER shown in Fig. 2-37.

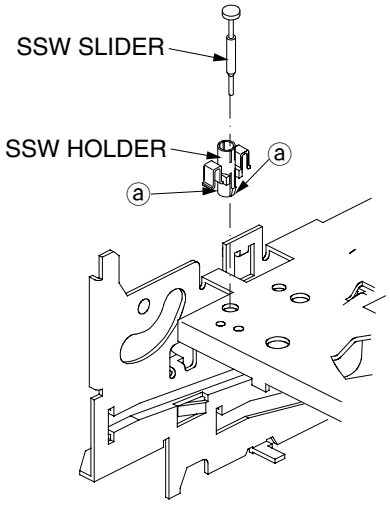


Fig. 2-37

3. Interchangeability Adjustment of the Mechanism

Note 1 : Tracking may need to be preset during interchangeability adjustment of the mechanism. Digital tracking is preset by short circuiting TP5A and TP5B on the PCB-MAIN.

Note 2 : The adjustments are performed in the PLAYBACK mode, using the staircase signal of an alignment tape,unless otherwise specified.Connect an oscilloscope to TP2A and externally trigger from TP2H.

3-1. Adjustment of BACK TENSION and TENSION POLE's Position

Run a Blank Tape for several minutes to break in the REEL DISKs and the Tape Running System before the adjustment.

1. Play back a dummy Tape.
2. Confirm that "A", the distance between the Holes in the TENSION ARM and the MAIN PLATE ASSY shown in the Fig. 3-1-1, is 0.6 ± 0.5mm.
3. If "A" is not 0.6 ± 0.5mm, move the Hole in the BELT ADJUSTER in the Fig. 3-1-2 within the range shown by the arrow Ⓐ to set "A" at 0.6 ± 0.5mm.
4. Set the BACK TENSION measuring jig (Code: 859C345O80) and play-back the tape.
5. Confirm that "A" shown in the Fig. 3-1-1 is 0.0 ± 0.5mm.
6. If "A" is not 0.0 ± 0.5mm at step 5, repeat the adjustment from step 1.
7. Confirm that the indicated value of the BACK TENSION measuring jig is within 55 ± 6g/cm.

Note 1 : Check the indicated value of the BACK TENSION measuring jig when the tape running condition becomes steady.

Note 2 : Replace the TENSION SPRING if the indicated value exceeds the specified value.

8. While the tape is running steadily, check visually that the vibration range of the TENSION POLE is 1mm or less. If the vibration range exceeds 1mm, replace the REEL DISK.

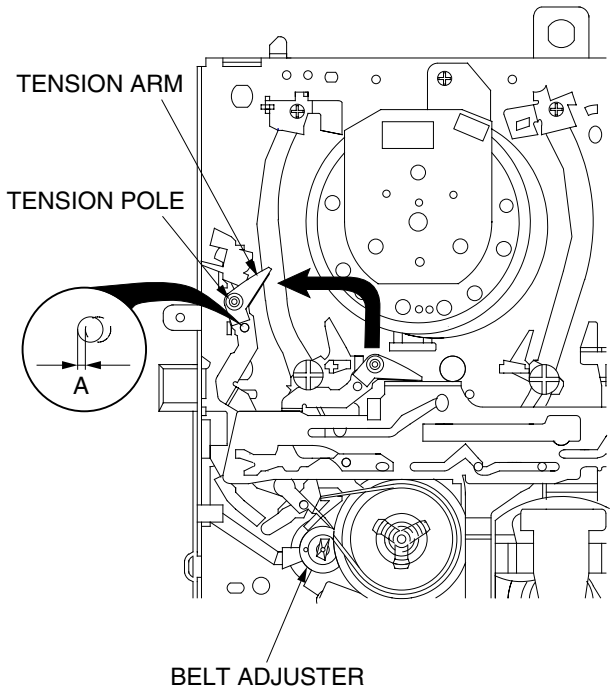


Fig. 3-1-1

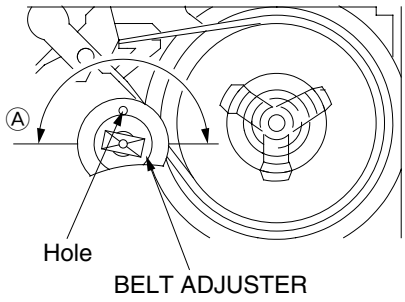


Fig. 3-1-2

3-2. Check and Adjustment of the FM Envelope

3-2-1. GUIDE ROLLER Adjustment check

1. Play back an alignment tape (NM6KE2 : 859C339O90).
2. Preset the tracking.
3. Confirm that the FM Waveform is flat such as in (A).
4. Perform the Item 3-2-2. "Height Adjustment of GUIDE ROLLER (SP) " if the leading edge (the DRUM entry side) of the FM Waveform is not flat (Waveform (B) or (C)). Perform the Item 3-2-3. "Height Adjustment of GUIDE ROLLER (TU)" if the trailing edge (the DRUM exit side) is not flat (Waveform (D) or (E)).

3-2-2. Height Adjustment of GUIDE ROLLER (SP)

1. Loosen the height adjustment screw at the top of the GUIDE ROLLER (SP) so that the GUIDE ROLLER (SP) will rotate smoothly.
2. Observe the leading edge (DRUM entry side) of the FM Waveform. If it looks like (B), the GUIDE ROLLER may be set too low. If it looks like (C), the GUIDE ROLLER may be set too high. To adjust it, turn the height adjustment screw at the top of the GUIDE ROLLER (SP) so that the FM Waveform becomes flat such as in (A).
   - Turn the screw counter-clockwise if the position of the GUIDE ROLLER is lower than specified.
   - Turn the screw clockwise if the position of the GUIDE ROLLER is higher than specified.
3. Perform the Item 3-2-4. "Coarse Adjustment of Phase".

3-2-3. Height Adjustment of GUIDE ROLLER (TU)

1. Loosen the height adjustment screw at the top of the GUIDE ROLLER (TU) so that the GUIDE ROLLER (TU) will rotate smoothly.
2. Observe the trailing edge (DRUM exit side) of the FM Waveform. If it looks like (D), the GUIDE ROLLER may be set too low. If it looks like (E), the GUIDE ROLLER may be set too high. To adjust it, turn the height adjustment screw at the top of the GUIDE ROLLER (TU) so that the FM Waveform becomes flat as in (A).
   - Turn the screw counter-clockwise if the position of the GUIDE ROLLER is too low.
   - Turn the screw clockwise if the position of the GUIDE ROLLER is too high.
3. Perform the Item 3-2-4. "Coarse Adjustment of Phase".

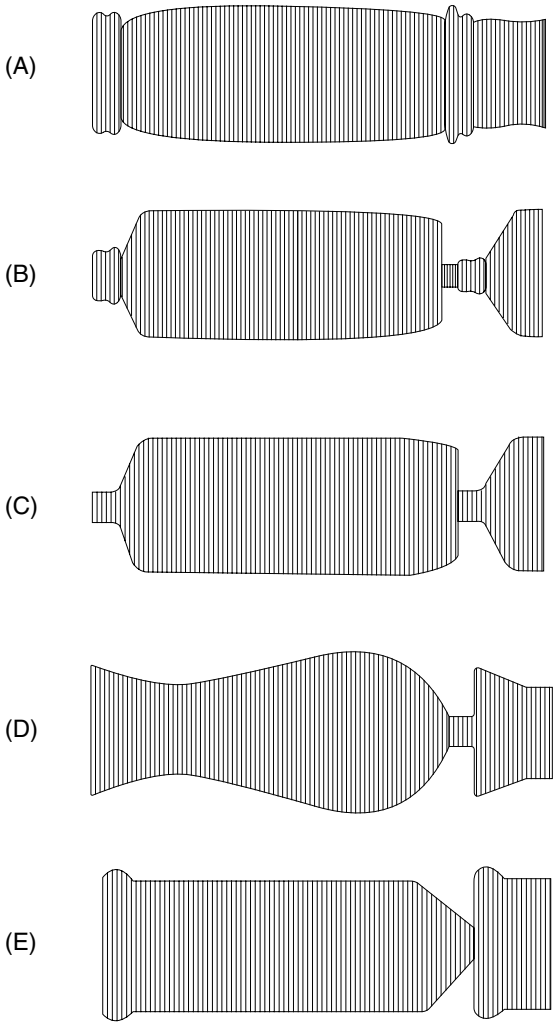


Fig. 3-2-1

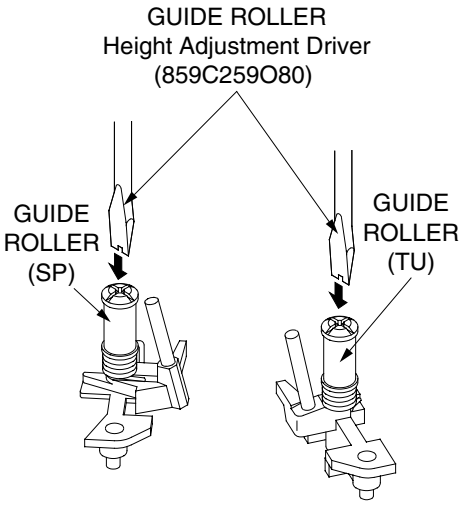


Fig. 3-2-2

3-2-4. Coarse Adjustment of Phase

1. Play back an alignment tape (NM6KE2 : 859C339O90).
2. Preset the tracking.
3. Observe the FM Waveform after performing Item 3-2-1. "GUIDE ROLLER Check".
4. If the amplitude level of the FM Waveform is low as in (F) in Fig. 3-2-4, set it at the maximum level as in (G), according to the following procedure. Loosen the Screws D and E and insert a screw driver (+) into the Hole in the MAIN PLATE ASSY (Part Ⓐ). Then, move the A/C PLATE to the right and left to set the amplitude level to maximum.
5. Tighten the Screws D and E.

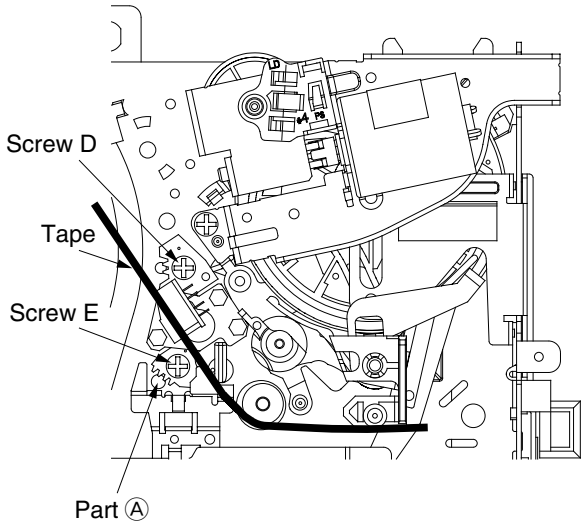


Fig. 3-2-3

3-2-5. Flatness Check of FM Waveform

1. Play back an alignment tape (NM6KE2 : 859C339O90).
2. Adjust the tracking and confirm that the amplitude of the FM signal remains flat.

Note : Adjust the tracking manually, according to the following procedure.

- Turn the Shuttle Ring of the product during PLAYBACK for manual tracking adjustment.
- Press the 3DSP button to switch the tracking adjustment from "Manual" to "Auto".

3. Adjust the tracking so that the amplitude level of the FM Waveform will be at the maximum. Set the oscilloscope so that the amplitude level of the FM Waveform is 5 divisions on the oscilloscope.
4. Adjust the tracking so that the peak of the FM Output Waveform is 4 divisions. Confirm that the FM Waveforms (B), (C), (D) and (E) are within the range of the specified values in the Fig. 3-2-5.
5. If the Waveforms are out of the specified values in step 4, repeat the Item 3-2. "Check and Adjustment of FM Envelope" from the beginning.

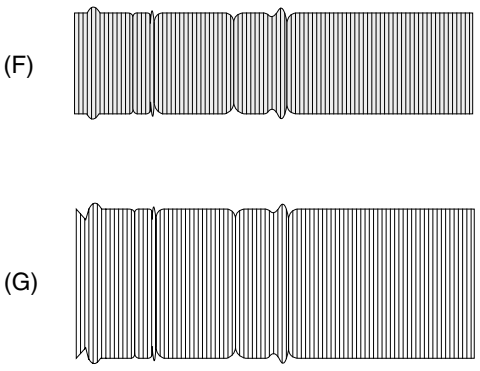
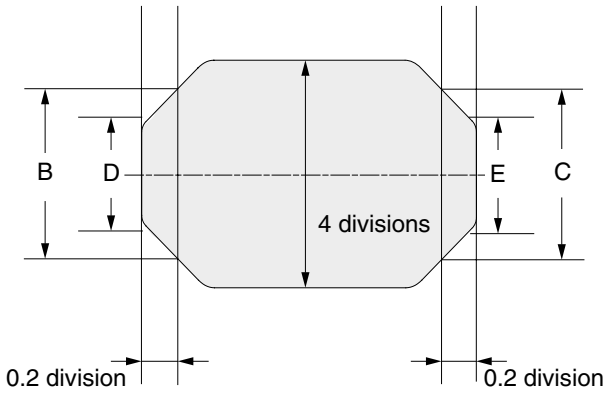


Fig. 3-2-4



	In VHS mode
B, C	3.0 divisions or more
D, E	1.0 division or more

Fig. 3-2-5

3-2-6. Tape Running Condition at the GUIDE ROLLERs (Check 1)

1. Play back an Alignment Tape. [NM6KE2: 859C339O90]
2. Confirm visually that there is a space between the Tape and the Lower FLANGE of the GUIDE ROLLER (SP) and the GUIDE ROLLER (TU).
3. If there is no space in step 2, replace the TAPE GUIDE ASSY (SP) and TAPE GUIDE ASSY (TU), according to the Item 2-32. "TAPE GUIDE ASSY (SP), TAPE GUIDE ASSY (TU)".
4. Alternately load and unload the tape several times and confirm that the FM Waveform remains flat.
5. If the flatness is affected, check the position of the A/C HEAD. If it is installed incorrectly, correct it according to the Item 2-8. "A/C HEAD UNIT" and repeat Item 3-2-4. "Coarse Adjustment of Phase".

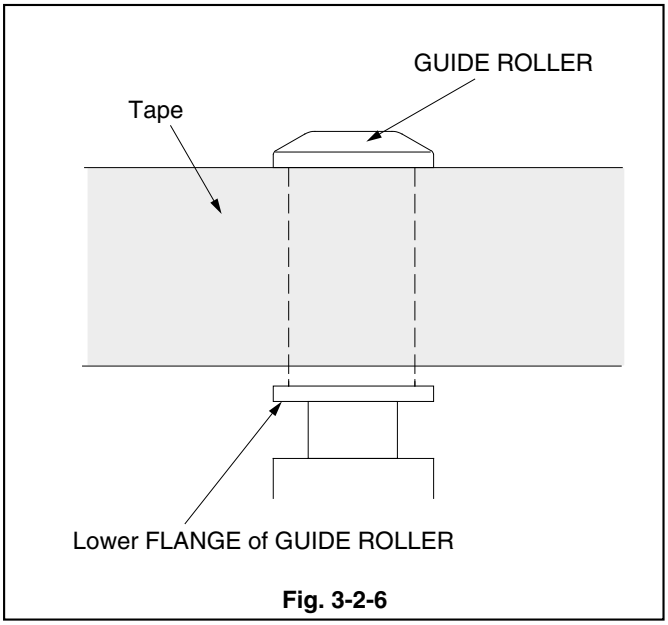


Fig. 3-2-6

3-2-7. Tape Running Condition at the GUIDE ROLLERs (Check 2)

1. Play back an alignment tape (NM6KE2 : 859C339O90).
2. Check that the FM Waveform is quickly restored to the previous level, after lightly pressing and releasing the tops of the GUIDE ROLLER (SP) and GUIDE ROLLER (TU).
3. If the FM Waveform is not restored immediately, replace the TAPE GUIDE ASSY (SP) and TAPE GUIDE ASSY (TU) according to the Item 2-32. "TAPE GUIDE ASSY (SP), TAPE GUIDE ASSY (TU)".

3-3. A/C HEAD Adjustment

3-3-1. Slant Adjustment of A/C HEAD

1. Play back a blank tape.
2. Slowly turn the slant adjustment Screw C shown in the Fig. 3-3-1 counter-clockwise to slightly crease the bottom of the tape at the Lower FLANGE of the GUIDE POLE (TU).
3. Slowly return the slant adjustment Screw C to remove the crease.
4. Slowly turn the slant adjustment Screw C counter-clockwise again and stop just before the tape is creased.

3-3-2. Azimuth and Height Adjustment of A/C HEAD

1. If the height of the CONTROL HEAD is shifted from the specified value in the Fig. 3-3-2, adjust it with the Height Adjustment Screws A, B and C shown in the Fig. 3-3-1.
2. After adjustment with the Screws A, B or C, repeat the Item 3-3-1. "Slant Adjustment of A/C HEAD".
3. Connect the oscilloscope to the audio output terminal.
4. Play back an alignment tape (NM6KE2 : 859C339O90).
5. Turn the Azimuth Adjustment Screw B in the Fig. 3-3-1 to set the audio output level in the Fig. 3-3-1 at the maximum. After the adjustment, remove the screw driver and confirm that the audio output level is 4.6 divisions or more when the maximum audio output level is set to 5. If the audio output level is less than 4.6, repeat steps 1 ~ 5.
6. Push the A/C HEAD to the right and left (in the direction of A-A' in the Fig. 3-3-1) and release it. And confirm that the audio output level does not change. (Do not push the A/C HEAD until the audio output level is reduced to 3/4 or less of its maximum level.)
7. Confirm that changes in the audio output level are 2dB or less in the PLAYBACK mode.
8. If the change in the audio output level exceeds 2dB, repeat the Item 3-3-1. "Slant Adjustment of A/C HEAD".
9. If the above procedure steps 1 ~ 8 proves to be unsatisfactory, replace the TAPE GUIDE ASSY (SP) and the TAPE GUIDE ASSY (TU), according to the Item 2-32. "TAPE GUIDE ASSY (SP), TAPE GUIDE ASSY (TU)".

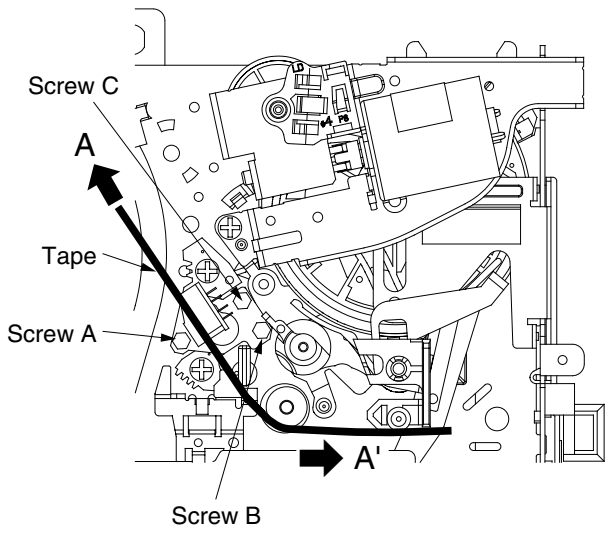


Fig. 3-3-1

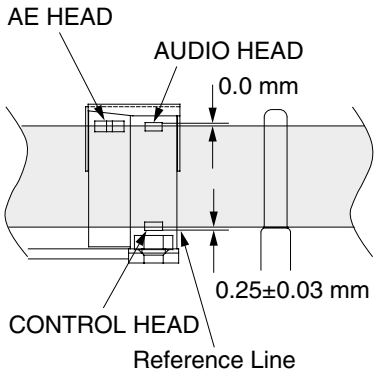


Fig. 3-3-2

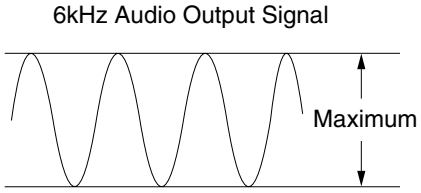


Fig. 3-3-3

3-4. Phase Adjustment

1. Play back an alignment tape (NM3KE6 : 859C339O50).
2. Preset the tracking.
3. Loosen the Screws D and E shown in the Fig. 3-4-1. Insert a screw driver (+) into the Hole in the MAIN PLATE ASSY (Part Ⓐ) and move the A/C PLATE to the right and left to set the amplitude level of the FM Waveform to maximum.
4. Tighten the Screws D and E.
5. Play back an alignment tape [NMX : 859C568O60].
6. Confirm the Missing Portions of the FM Waveform and Audio Waveform are as shown in the Fig. 3-4-2.
7. If the Missing Portions differ from the Fig. 3-4-2, repeat the procedure 3.
8. Adjust the tracking so that the amplitude level of the FM Waveform will be at the maximum. And set the oscilloscope so that the Waveform will be 5 divisions of the oscilloscope.
9. Preset the tracking.
10. Confirm that the FM Waveform on the oscilloscope is 4.8 divisions or more.
11. If the FM Waveform is below 4.8 divisions, preset the tracking and repeat steps 3~10.
12. Push the A/C HEAD to the right and left (in the direction of A-A' in the Fig. 3-4-1) and release it. Confirm that the amplitude of the FM Waveform does not change, compared to before the A/C HEAD was shifted.
13. If the amplitude level of the FM Waveform changes, check the set position of the A/C HEAD. If the A/C HEAD is installed incorrectly, correct the position according to the Item 2-8. "A/C HEAD UNIT" and 3-3. "A/C HEAD Adjustment", and then repeat this item from the beginning.
14. Alternately load and unload the tape several times. Confirm that the amplitude of the FM Waveform does not change.

3-5. Tape wrinkle check

1. Confirm that there is no wrinkle at the lower edge of GUIDE POLE(TU) in PB/FS mode with T-160 tape beginning and ending.
2. Confirm that there is no wrinkle at the upper edge of GUIDE POLE(TU) in RS mode with T-160 tape beginning and ending.

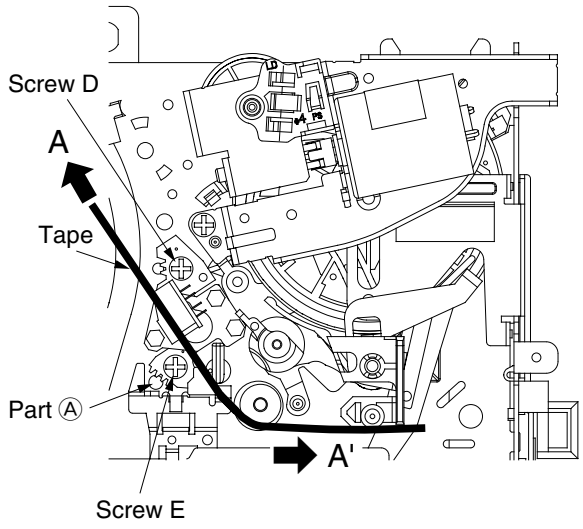


Fig. 3-4-1

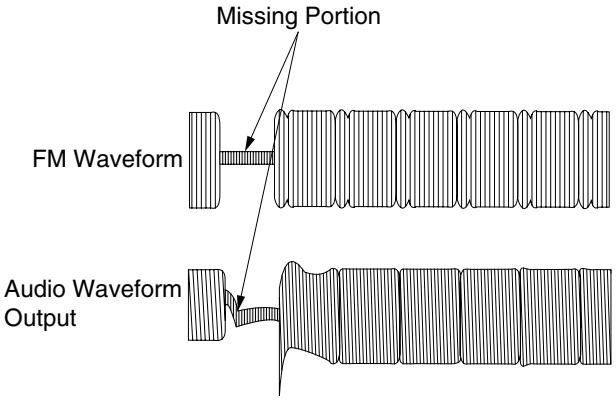


Fig. 3-4-2

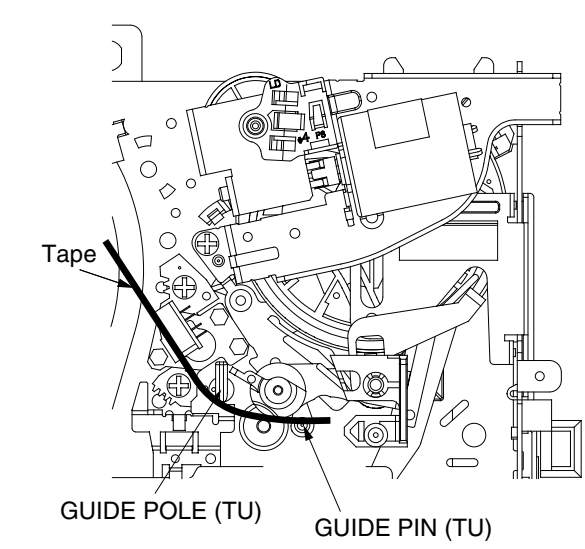


Fig. 3-5

4. Servicing for Tape Jam during the Loading Process

1. Remove the tape if the mechanism part is locked due tangled tape.
2. Rotate the WORM WHEEL of the LOADING MOTOR ASSY shown in the Fig. 4 in the direction of the arrow Ⓐ to eject the cassette tape.

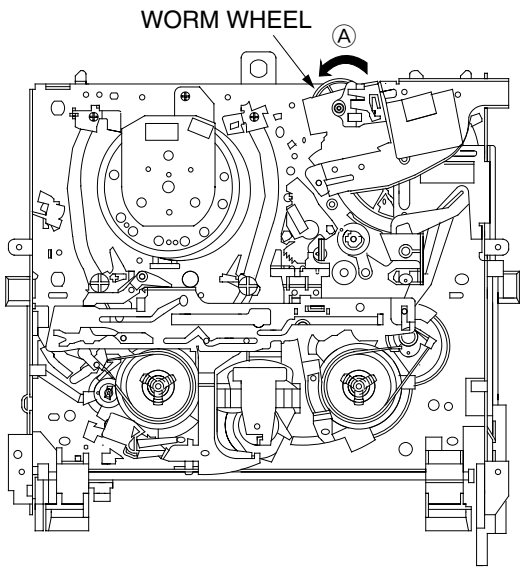


Fig. 4

SERVICE CAN BE EXECUTED WITH THE EE PICTURE DISPLAYED

1. Short-circuit the cathode side of D927 and the GND of the DECK ASSY using the jig shown in Fig. 2.
2. Remove the DECK ASSY.
3. Connect TP5X and TP5Y with a jumper

Note1: Short-circuit the test points before turning on the power.

Note2: Short-circuit the Shield Case and the cathode side of D927 using the jig shown in Fig. 2 before attaching the DECK ASSY.

PCB-MAIN (Component side)

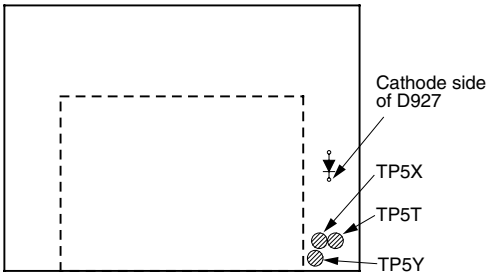


Fig. 1

Jig (Part No. : 859C548O10)

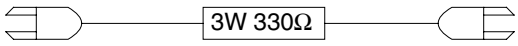


Fig. 2

DECK OPERATION CHECK

Check the DECK position and the operation of the Tape Running System, according to the following procedure.

1. Short-circuit TP5T and TP5Y shown in the Fig. 1.
2. Initialize the E²PROM.
3. Check the operation of the Tape Running System by pressing the FF button, REW button on the PCB-MAIN.
   FF button : For forward rotation of the CAPSTAN MOTOR
   REW button : For reverse rotation of the CAPSTAN MOTOR
4. Check the DECK position by pressing the CH-UP button, CH-DOWN button on the PCB-MAIN.
   CH-UP button : DECK operation in the Loading direction
   CH-DOWN button : DECK operation in the Unloading direction

HOW TO INITIALIZE THE E²PROM

A replacement E²PROM is not initialized before shipping, so the E²PROM must be initialized when replaced.

Initialize the E²PROM by following the steps below.

1. Press and hold the POWER button on the set for 8 seconds.
2. E²PROM initial setting is completed.

WHEN REPLACING IC5A0

When replacing IC5A0, be sure to press the RESET button after turning on the power.

ELECTRICAL ADJUSTMENTS

Perform only the alignments required. If proper equipment is not available, do not attempt an alignment.

PRE-ADJUSTMENT SETTINGS

- Set the PerfecTape™ to “MANUAL” mode.

TEST EQUIPMENT

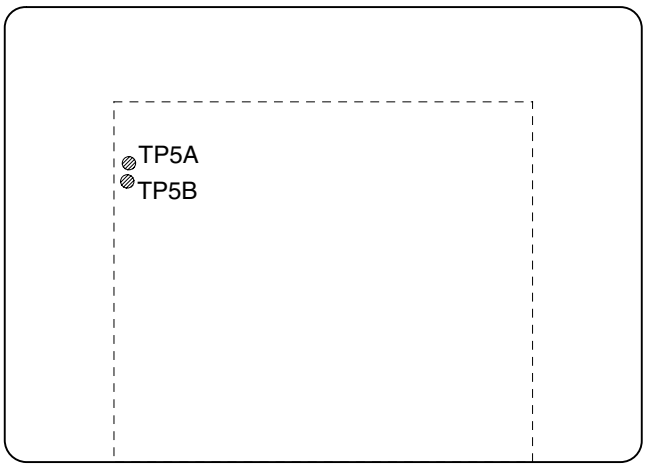
- Miscellaneous electrical tools
- Oscilloscope (10:1 probe unless 1:1 specified.)

ALIGNMENT TAPES

- NS1.....Part No.859C339O00
  Stair step, Color Bars, RF, 1kHz audio (SP)
- NM6KE2.....Part No.859C339O90
  Monoscope, 6kHz audio (SP)
- NC1KS·····Part No.859C339O80
  Color Bars, 1kHz audio (SP)
- NM3KE6.....Part No.859C339O50
  Monoscope, 3kHz audio (EP)
- NMX.....Part No.859C568O60
  Monoscope, 3kHz audio (SP)

LOCATIONS

PCB-MAIN (Component side) **REAR**

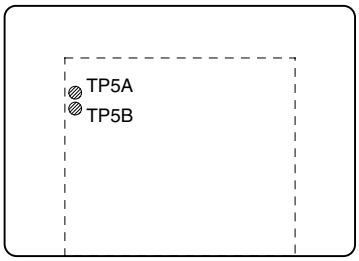


[Servo circuit] 1. Playback Switching Point	**Adjustment purpose**	Video switch over timing during playback.
	Symptom when incorrectly adjusted	Switching noise or jitter in the playback picture.

Measuring instrument and condition		**VCR set up condition**	
– – –		**Input signal**	– – –
Test point	– – –	**Using tape**	Alignment Tape (NS1, stair step)
EXT trigger	– – –	**VCR condition**	Playback
Measurement range	– – –	**Using Jig**	– – –

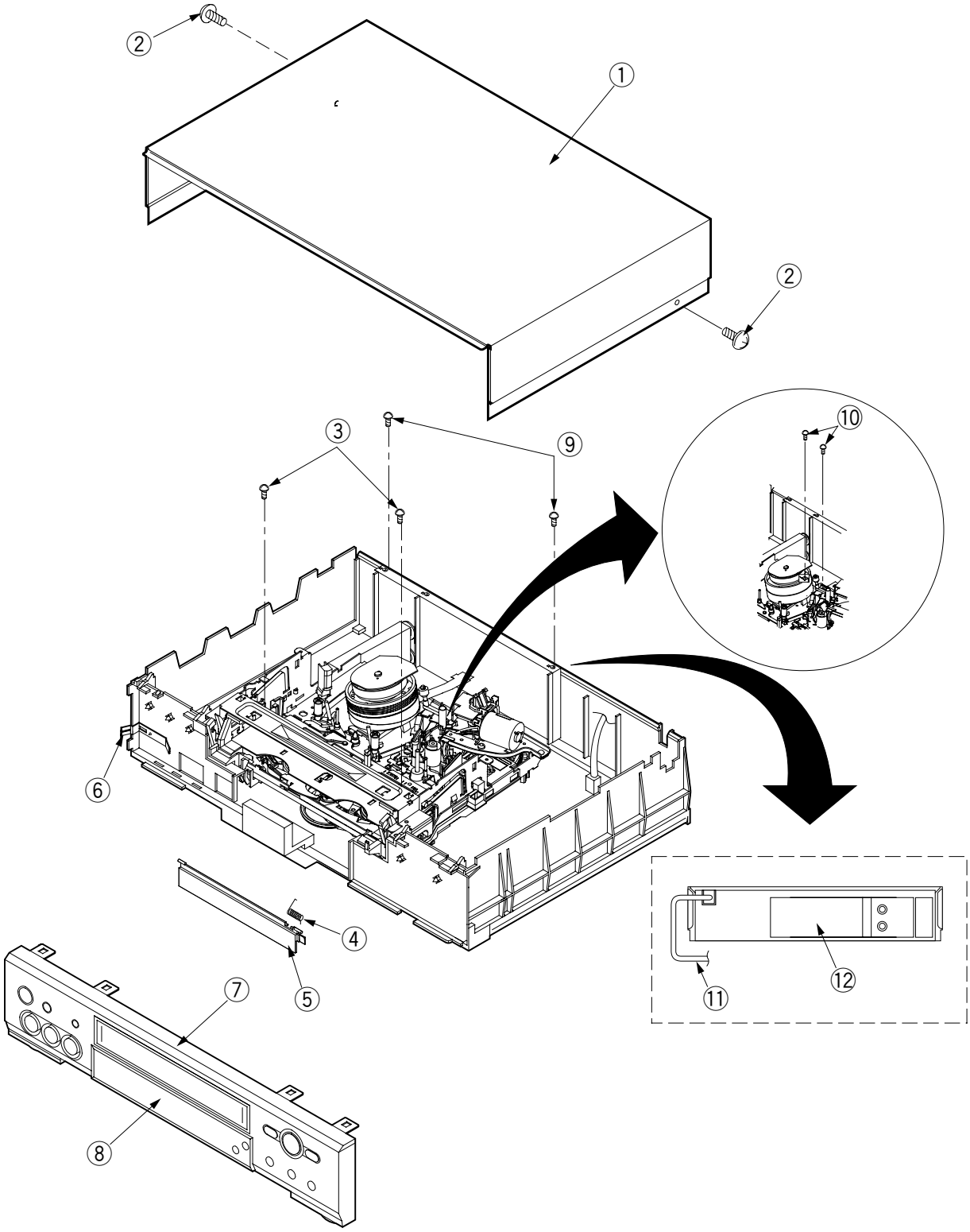
1. Play back an Alignment Tape. (NS1, stair step)
2. Short-circuit TP5A to TP5B.
3. Push the CHANNEL-UP, DOWN buttons at the same time.
   (The adjustment will finish in about six seconds.)
4. Open-circuit TP5A to TP5B.

PCB-MAIN (Component side)



PARTS LIST

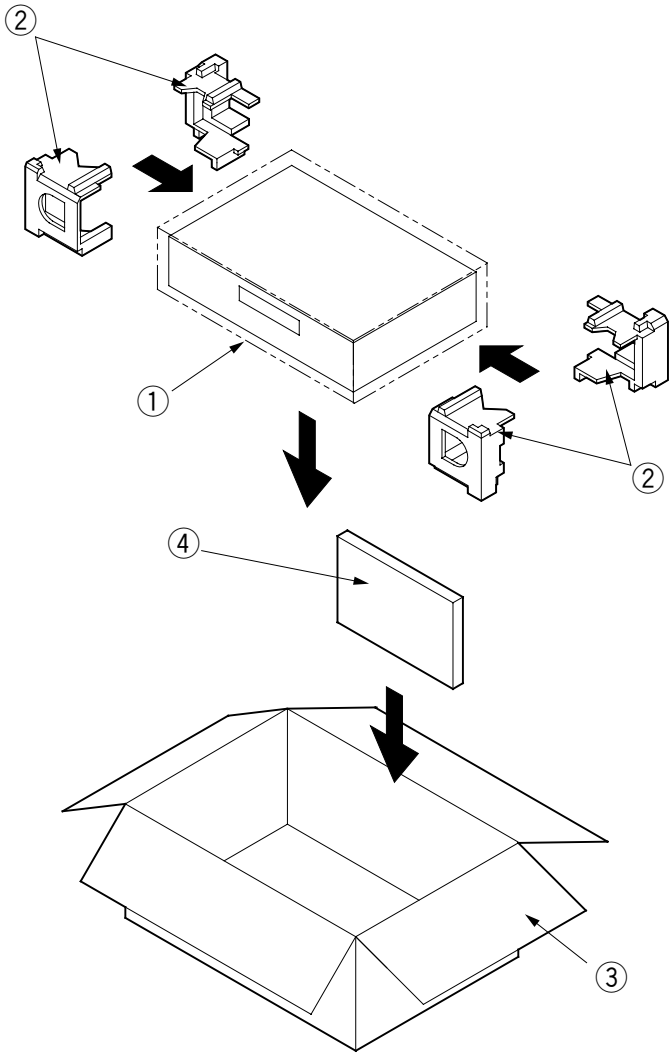
1. CABINET ASSEMBLY



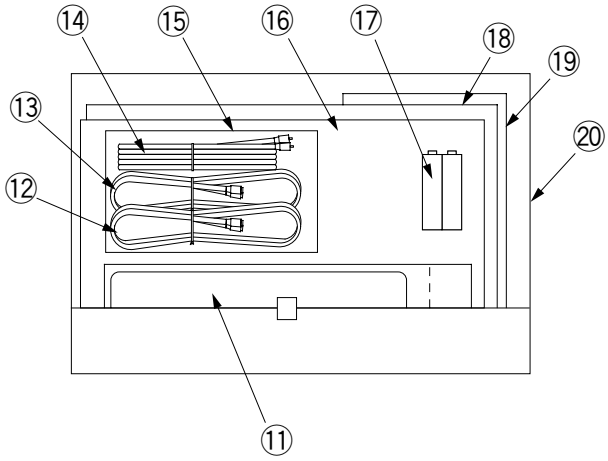
: Critical Component

ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		CABINET ASSEMBLY	
1	968C049O03	TOP COVER ASSY	
2	669D501O30	SCREW	3 × 10
3	669D221O40	SCREW	4 × 12 46LA005
4	572D385O10	F/L SPRING	
5	752C668O40	CASSETTE DOOR ASSY	
6	573D078O10	FRONT EARTH SPRING	
7	701B440O30	FRONT UNIT	
8	752C670O70	TIMER PANEL	
9	669D500O30	SCREW	3 × 10
10	669D229O90	SCREW	M3.0 × 4 46LA005
11	246C324O10	AC POWER CORD	
12	761B371O70	ANTENNA COVER	

2. PACKING PARTS



ACCESSORY

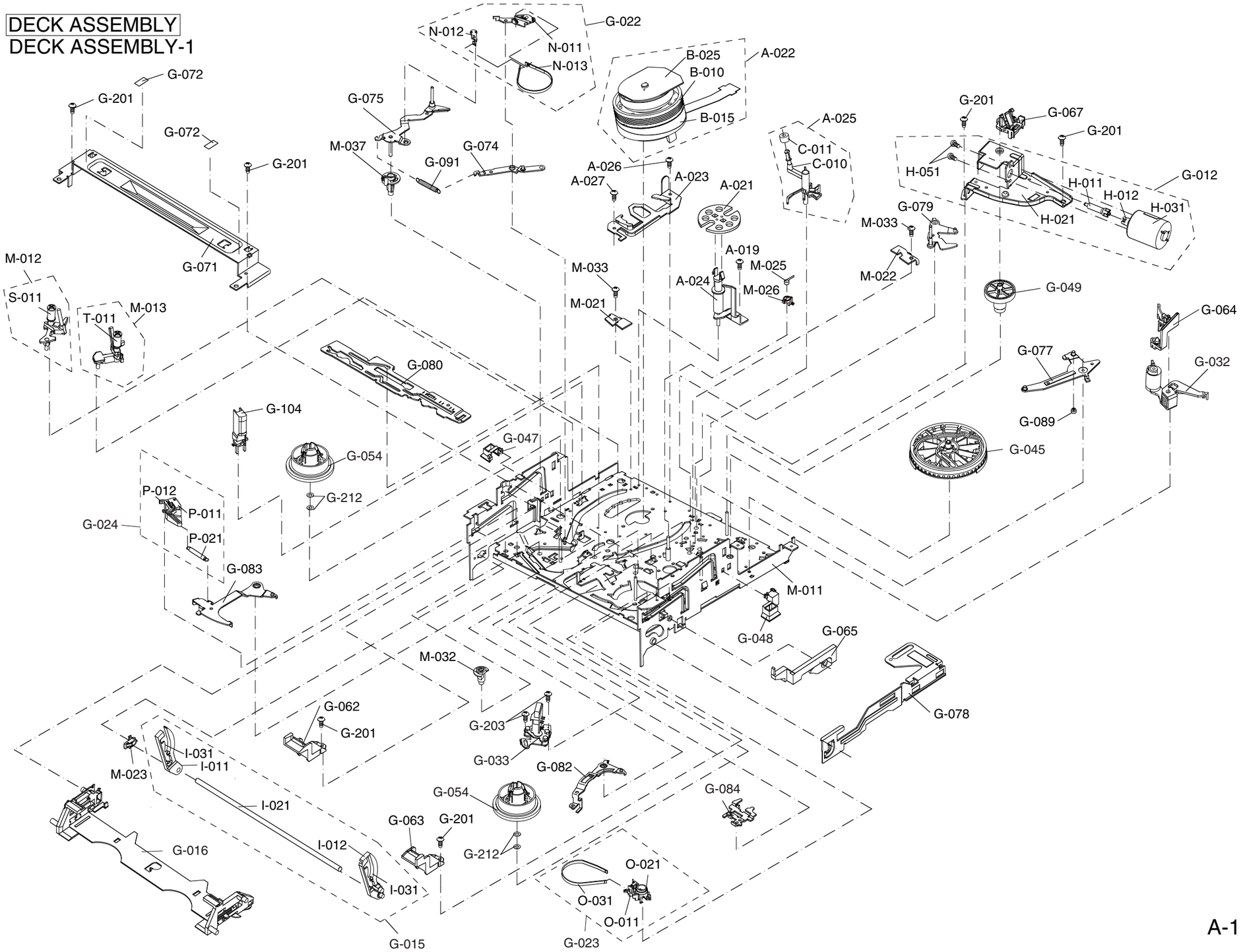


ITEM NO.	PARTS NO.	PARTS NAME	DESCRIPTION
		PACKING PARTS	
1	831D190O30	PACKING SHEET	800X800
2	803A585O10	CUSHION	
3	802B827O20	PACKING CASE	
4	–––––––	ACCESSORY	
		ACCESSORY	
11	939P755O20	REMOTE HAND UNIT	
12	243C273O10	CABLE	
13	243C274O10	Y/C CABLE	S-S1.5M
14	242C938O10	PHONO CABLE	2P R&W L=1.5M
15	–––––––	UNIT ANT ADAPTER	
16	–––––––	ACCESSORY BOARD	
17	–––––––	BATTERY	
18	872C246O40	INSTRUCTION BOOK	
19	–––––––	REGISTRATION CARD	
20	831D337O10	PACKING BAG	

DECK ASSEMBLY

DECK ASSEMBLY

DECK ASSEMBLY-1



DECK ASSEMBLY-1

* Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
A-019	669D224O90	○	G-3		SCREW	2.6 × 5	1
A-021	597D568O10		G-2		FLYWHEEL (SP)		1
A-022	948B404O09		G-1		DRUM ASSY		1
A-023	592B552O10		F-2		DRUM CLAMPER		1
A-024	594C306O10		F-3		IMPEDANCE UNIT (SP)		1
A-025	927D027O01		H-2		CLEANING ASSY		1
A-026	669D556O10	○	F-2		SCREW	2.6 × 4	1
A-027	669D556O10	○	F-2		SCREW	2.6 × 4	1
B-010	925B115O15	○	G-1		UPPER DRUM ASSY		1
B-015	927B955O05	○	G-1		LOWER DRUM ASSY		1
B-025	288P158O30	○	G-1		DRUM MOTOR		1
C-010	641B903O10	○	G-2		CLEANING ARM		1
C-011	554D104O20	○	H-2		FELT RING		1
G-012	928D472O11	○	K-2		LOADING MOTOR ASSY		1
G-015	948D088O03		D-8		F/L ARM ASSY		1
G-016	948B406O03	○	B-8		F/L BOTTOM ASSY		1
G-022	948D095O01		F-1		TENSION BELT ASSY		1
G-023	948D096O01		F-8		BRAKE ASSY (TU)		1
G-024	948D097O02	○	A-5		CHARGE ASSY		1
G-032	594C260O40	○	K-4		PINCH ASSY		1
G-033	460C007O10	○	E-7		A/C HEAD UNIT		1
G-045	621C769O20	○	I-4		MAIN CAM		1
G-047	621C783O10	○	E-4		SENSER COVER (SP)	SUPPLY	1
G-048	621C784O10	○	G-6		SENSER COVER (TU)	TAKE UP	1
G-049	621C794O10	○	J-3		WROM WHEEL		1
G-054	640C181O20	○	D-4	D-7	REEL DISK		2
G-062	621C789O10	○	C-6		INSERT GUIDE (SP)	SUPPLY	1
G-063	621C790O10	○	D-7		INSERT GUIDE (TU)	TAKE UP	1
G-064	641B902O10	○	K-3		PINCH ARM CAP		1
G-065	641B908O10	○	H-6		DOOR ARM		1
G-067	621C804O10		J-1		FC HOLDER		1
G-071	592B549O10	○	B-3		STAY PLATE		1
G-072	640D852O20		B-1	B-2	SPACER		2
G-074	594C217O10	○	E-2		TENSION LEVER		1
G-075	594C218O10	○	D-1		TENSION ARM		1
G-077	594C222O10	○	I-3		BRAKE LEVER		1
G-078	594C223O10	○	I-6		F/L PLATE		1
G-079	594C224O20	○	H-2		GUIDE ARM (TU)		1
G-080	594C225O30	○	D-4		BRAKE CAM PLATE		1
G-082	594C229O10	○	E-7		SHIFT LEVER		1
G-083	594C230O10	○	C-5		SWING LEVER		1
G-084	597D866O10	○	G-7		L/D LOCK LEVER		1
G-089	622D829O10	○	I-4		LB PIN		1
G-091	572D974O10	○	D-2		TENSION SPRING		1
G-104	460D018O10	○	C-4		F/E HEAD		1
G-201	669D224O90	○	A-1 D-7 J-2	C-2 I-1	SCREW	2.6×5	6
G-203	669D476O30	○	E-7		SCREW	2.6×6	2
G-212	552C017O30	○	C-5	E-8	THRUST WASHER	2.5×6×0.13	4
H-011	621C758O10	○	J-2		LOADING WORM		1
H-012	622D788O10		J-2		COUPLING WORM		1
H-021	594C216O10		J-2		MOTOR HOLDER		1
H-031	288P090O10		J-2		LOADING MOTOR		1

DECK ASSEMBLY-1

* Settled Service Parts

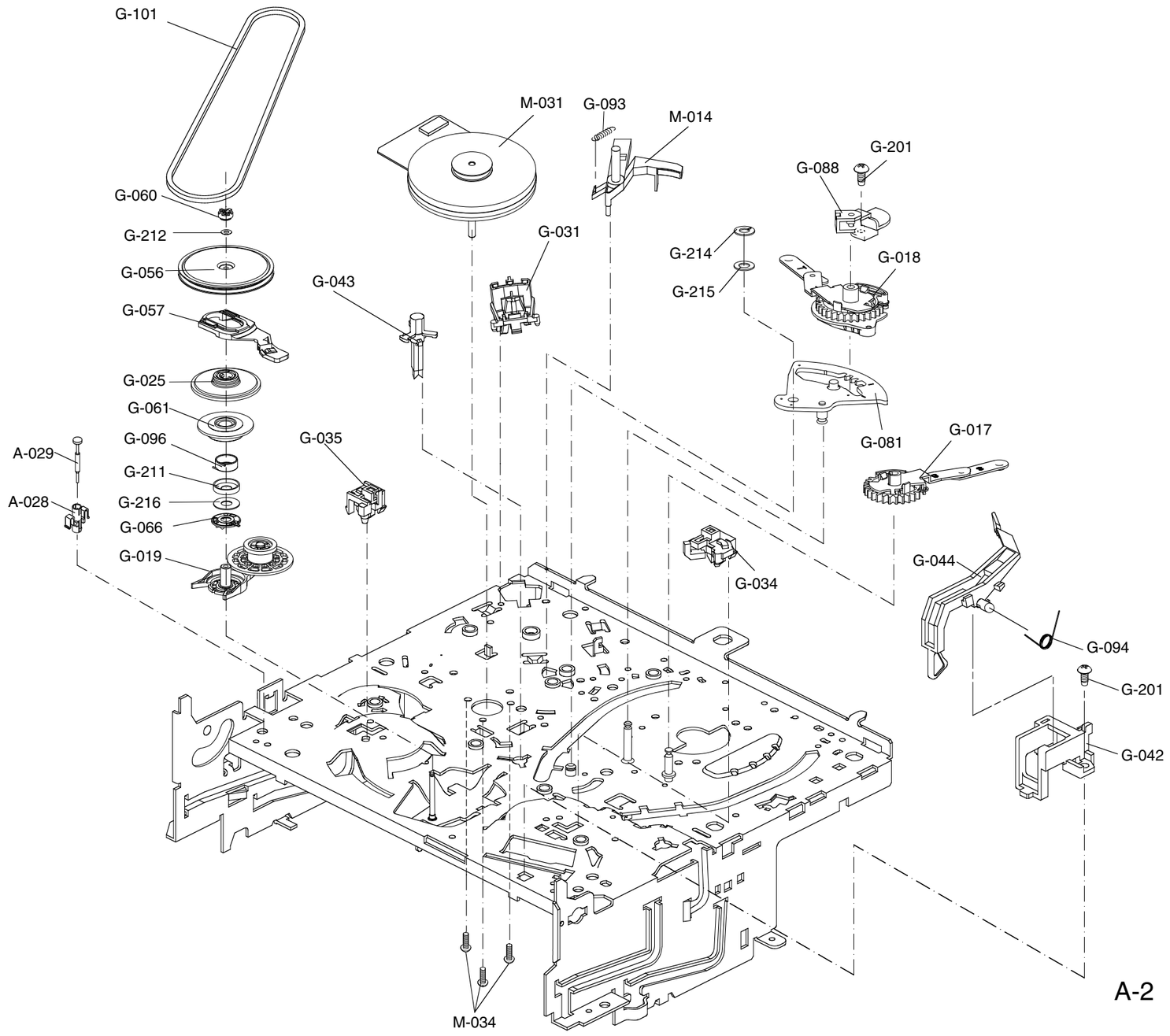
ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
H-051	669D173O80	○	H-2		SCREW	M3×0.5-4	2
I-011	641B913O10	○	B-7		ARM (SP)		1
I-012	641B911O20	○	C-8		ARM (TU)		1
I-021	631D823O10	○	C-7		F/L SHAFT		1
I-031	573D004O10	○	B-7	D-8	ARM SPRING		2
M-011	948B403O01		G-5		MAIN PLATE ASSY		1
M-012	948D084O01	○	A-3		TAPE GUIDE ASSY (SP)	SUPPLY	1
M-013	948D086O01	○	B-3		TAPE GUIDE ASSY (TU)	TAKE UP	1
M-021	594C258O01		F-3		GUIDE CATCHER (SP)	SUPPLY	1
M-022	594C259O01		H-3		GUIDE CATCHER (TU)	TAKE UP	1
M-023	622D799O10	○	B-7		F/L BEARING		1
M-025	622D820O10	○	G-3		GUIDE PIN COVER		1
M-026	621C944O10	○	G-3		GUIDE PIN COVER 2		1
M-032	622D791O10	○	D-6		BELT ADJUSTER		1
M-033	669D224O90	○	F-3	H-2	SCREW	M2.6×5	2
M-037	622D792O10	○	C-2		TENS AXIS HOLDER		1
S-011	522B061O10	○	A-3		GUIDE ROLLER (SP)	SUPPLY	1
T-011	522B061O10	○	B-3		GUIDE ROLLER (TU)	TAKE UP	1
N-011	621C759O10	○	E-1		BELT LEVER		1
N-012	622D790O10	○	D-1		BELT HOLDER		1
N-013	554D103O10	○	E-1		BRAKE BELT (SP)		1
O-011	621C760O10	○	F-8		BRAKE (TU)		1
O-021	572D975O10	○	F-8		BRAKE SPRING		1
O-031	554D103O10	○	F-8		BRAKE BELT (TU)		1
P-011	640C187O10		B-5		CHARGE BASE		1
P-012	640C188O20		B-5		CHARGE TIP		1
P-021	572D983O20		B-5		CHARGE SPRING		1

A	B	C	D	E	F	G	H	I

1 2 3 4 5 6 7 8

DECK ASSEMBLY

DECK ASSEMBLY-2



DECK ASSEMBLY-2

* Settled Service Parts

ITEM	PARTS NO.	*	ADDRESS		PARTS NAME	DESCRIPTION	Qt.
A-028	621C810O10		A-5		SSW HOLDER		1
A-029	622D837O10		A-4		SSW SLIDER		1
G-017	948D089O01	○	H-4		LOADING ARM ASSY (SP)	SUPPLY	1
G-018	948D090O01	○	G-3		LOADING ARM ASSY (TU)	TAKE UP	1
G-019	622D916O10	○	B-5		IDLER 2 UNIT		1
G-025	948D098O03	○	B-4		PULLEY GEAR ASSY		1
G-031	622D800O10	○	E-3		MODE POSITION UNIT		1
G-034	622D801O10	○	F-5		REV UNIT (SP)	SUPPLY	1
G-035	622D802O10	○	C-4		REV UNIT (TU)	TAKE UP	1
G-042	621C807O10		I-6		REC HOLDER		1
G-043	621C765O10	○	C-3		LAMP GUIDE		1
G-044	621C766O20	○	H-5		REC LEVER		1
G-056	640C185O30	○	B-3		BELT PULLEY		1
G-057	640C186O10	○	B-3		SHIFT SLIDER		1
G-060	640D948O10	○	B-2		PULLEY BUSH		1
G-061	640D949O10	○	B-4		SLIP GEAR		1
G-066	640C189O20	○	B-5		SLIP ADJUSTER		1
G-081	594C228O10	○	G-4		A/L LEVER		1
G-088	594C304O10	○	G-2		SPACER PLATE		1
G-093	572D976O10	○	E-2		CAPSTAN BRAKE SPRING		1
G-094	572D977O10	○	I-6		REC SPRING		1
G-096	573D073O10	○	B-4		SLIP SPRING 2		1
G-101	521D102O10	○	B-1		REEL BELT		1
G-201	669D224O90	○	G-2	I-6	SCREW	2.6×5	2
G-211	597D997O10	○	B-4		SLIP 2 WASHER		1
G-212	552C017O30	○	B-3		THRUST WASHER	2.5×6×0.13	1
G-214	552C022O10		F-3		CUT WASHER	4.0×8.0×0.5	1
G-215	680P140O10		F-3		WASHER		1
G-216	552C012O50		B-5		THRUST WASHER	5.6×9.5×0.2	1
M-014	948D094O01	○	F-2		CAPSTAN BRAKE ASSY		1
M-031	288P213O30	○	E-2		CAPSTAN MOTOR		1
M-034	669D285O10		D-8		SCREW	M2.6×6	3

3. ELECTRICAL PARTS

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
	INTEGRATED CIRCUITS		
IC2A0	270P881O10	IC	HA118421BSNF
IC2A1	270P882O10	IC	MM1501XNRE
IC2A3	270P882O10	IC	MM1501XNRE
IC2000	275P704O10	MOS IC	TC90A80N
IC3A0	275P410O10	IC	AN3662FBP
IC5A0	275P635O10	MOS IC	M37760MCH4A1GP
IC5A1	274D103O10	MOS IC	
IC5A4	272P235O10	IC	TA7291S
IC6A0	272P765O10	IC	M52052FP
IC6A1	272P325O40	IC	NJM2535M
IC6A2	270P787O10	IC	NJM2534M
IC6A3	270P883O10	IC	MM1503XNRE
IC6A4	272P325O40	IC	NJM2535M
IC6J0	272P278O10	IC	LA7213
IC8A0	275P701O10	MOS IC	PT6958
IC901	272P500O20	IC	HA17431PA
	TRANSISTORS		
Q102	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2A0	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2A1	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2A2	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2A3	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2A4	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2A5	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2A6	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2A7	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2A8	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2A9	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2B0	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2B1	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2B2	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2B5	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2B8	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2000	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2001	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2002	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2003	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2004	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2005	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2006	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2007	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2008	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2009	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2010	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q2012	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q2013	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q2014	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q351	261P056O10	TRANSISTOR	2SD734F
Q352	260P629O60	TRANSISTOR	2SC3331-T
Q353	260P629O60	TRANSISTOR	2SC3331-T
Q354	261P065O30	CHIP TRANSISTOR	DTA124EKA
Q355	260P562O40	TRANSISTOR	2SA952-K
Q356	261P067O30	CHIP TRANSISTOR	DTC124EKA

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
Q3A0	261P065O30	CHIP TRANSISTOR	DTA124EKA
Q3A2	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q3L0	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q5A3	260P802O20	CHIP TRANSISTOR	2SA1235-F
Q5A5	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q5B1	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q5B4	260P804O30	CHIP TRANSISTOR	2SC3052-G
Q5L0	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q5P1	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q5P2	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q6A0	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6B0	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6B1	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6C0	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C1	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6C2	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C3	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C4	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C5	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C6	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6C7	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6C8	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6C9	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6D0	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6D1	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6D2	261P065O30	CHIP TRANSISTOR	DTA124EKA
Q6D3	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q6D4	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q6D5	261P067O30	CHIP TRANSISTOR	DTC124EKA
Q6D6	261P065O30	CHIP TRANSISTOR	DTA124EKA
Q6J0	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6J1	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q6J2	260P818O30	CHIP TRANSISTOR	2SC2412K-S
Q6J3	261P066O10	CHIP TRANSISTOR	2SA1037AK
Q901	261P035O20	TRANSISTOR	2SC5130
Q903	260P629O60	TRANSISTOR	2SC3331-T
Q904	260P562O40	TRANSISTOR	2SA952-K
Q905	260P559O50	TRANSISTOR	2SC1740S-E
Q906	260P630O10	TRANSISTOR	2SD2012
Q907	260P559O50	TRANSISTOR	2SC1740S-E
Q909	260P559O50	TRANSISTOR	2SC1740S-E
Q910	260C560O10	TRANSISTOR	2SA933S-R,S
Q919	261P036O10	TRANSISTOR	2SB1548
Q920	260P559O50	TRANSISTOR	2SC1740S-E
	DIODES		
D3A2	264P568O30	DIODE	1SS254
D5A0	264P568O30	DIODE	1SS254
D5A2	264P568O30	DIODE	1SS254
D5A9	264P795O20	LIGHT EMITTING DIODE	SID1050CMMTP5
D5B4	264P795O20	LIGHT EMITTING DIODE	SID1050CMMTP5
D5B5	264P795O20	LIGHT EMITTING DIODE	SID1050CMMTP5
D5C0	264P795O20	LIGHT EMITTING DIODE	SID1050CMMTP5
D5D0	264P342O70	DIODE	HZ4C2
D5R0	264P568O30	DIODE	1SS254
D8A4	264P568O30	DIODE	1SS254
D8A5	264P568O30	DIODE	1SS254

: Critical Components

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
D8A6	264P568O30	DIODE	1SS254
D8B0	264P568O30	DIODE	1SS254
D8B1	264P568O30	DIODE	1SS254
D901	264P508O70	DIODE	S1WB(A)60F4072
D902	264P687O20	DIODE	AG01
D903	264P568O30	DIODE	1SS254
D905	264P772O50	DIODE	MTZJ3.0A
D907	264P670O10	DIODE	D5S4M
D908	264P750O10	DIODE	FMB-G16L
D910	264P687O20	DIODE	AG01
D913	264P783O60	DIODE	MTZJ30D
D917	264P452O30	DIODE	HZ5C3
D918	264P568O30	DIODE	1SS254
D919	264P568O30	DIODE	1SS254
D920	264P500O20	DIODE	EM01Z
D921	264P568O30	DIODE	1SS254
D926	264P488O90	DIODE	RD16FB
D927	264P695O70	DIODE	RK39
D931	264P568O30	DIODE	1SS254
D933	264P568O30	DIODE	1SS254
D935	264P568O30	DIODE	1SS254
	FILTERS		
L2010	409P777O20	CHIP EMI FILTER	BLM21A05
L901	351P172O10	LINE FILTER	SS11V-10062
	COILS		
L02	325C472O20	PEAKING COIL	56µH-J
L03	325C472O50	PEAKING COIL	100µH-J
L04	325C472O50	PEAKING COIL	100µH-J
L100	325C473O70	PEAKING COIL	1000µH-J
L2A0	325C473O50	PEAKING COIL	680µH-J
L2A2	325C166O20	PEAKING COIL	8.2µHJ
L2A3	325C473O10	PEAKING COIL	330µH-J
L2A4	325C167O40	PEAKING COIL	82µH-J
L2A5	325C472O20	PEAKING COIL	56µH-J
L2A6	325C471O90	PEAKING COIL	33µH-J
L2A9	325C166O40	PEAKING COIL	12µH-J
L2B0	325C471O90	PEAKING COIL	33µH-J
L2B1	325C472O50	PEAKING COIL	100µH-J
L2B2	325C472O50	PEAKING COIL	100µH-J
L2B3	325C472O50	PEAKING COIL	100µH-J
L2B5	325C472O50	PEAKING COIL	100µH-J
L2B7	325C167O00	PEAKING COIL	39µH-J
L2C0	325C472O50	PEAKING COIL	100µH-J
L2000	325C472O50	PEAKING COIL	100µH-J
L2001	325C472O50	PEAKING COIL	100µH-J
L2002	325C472O10	PEAKING COIL	47µH-J
L2003	325C471O10	PEAKING COIL	6.8µH-J
L2004	325C471O30	PEAKING COIL	10µH-J
L2005	325C471O50	PEAKING COIL	15µH-J
L2006	325C471O10	PEAKING COIL	6.8µH-J
L2008	325C472O10	PEAKING COIL	47µH-J
L2009	325C471O10	PEAKING COIL	6.8µH-J
L300	325C472O50	PEAKING COIL	100µH-J
L350	325C472O50	PEAKING COIL	100µH-J
L3A0	325C471O30	PEAKING COIL	10µH-J
L3A1	325C471O30	PEAKING COIL	10µH-J
L3A2	325C472O50	PEAKING COIL	100µH-J
L5A0	325C472O50	PEAKING COIL	100µH-J
L5A1	325C121O30	PEAKING COIL	10µH-K
L6A0	325C472O50	PEAKING COIL	100µH-J
L6C0	325C472O50	PEAKING COIL	100µH-J
L6C1	325C167O00	PEAKING COIL	39µH-J
L6C2	325C472O50	PEAKING COIL	100µH-J
L6C3	325C472O30	PEAKING COIL	68µH-J
L6D0	325C472O50	PEAKING COIL	100µH-J
L6D1	325C472O50	PEAKING COIL	100µH-J
L6J0	325C471O90	PEAKING COIL	33µH-J
L8A0	325C471O90	PEAKING COIL	33µH-J
L902	321C141O90	RF COIL	33µH-K
L903	321C141O30	RF COIL	10µH-K
L904	321C141O90	RF COIL	33µH-K
T350	409P880O30	BIAS OSCILLATOR COIL	
	TRANSFORMERS		
T901	350P717O60	POWER TRANSFORMER	
	VARIABLE RESISTORS		
R901	109C010O50	SOLID RESISTOR	1/2W 2.2MΩ-K (UL)
R930	109C010O10	SOLID RESISTOR	1/2W 1MΩ-K
	RESISTORS		
R105	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R106	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R107	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R108	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R109	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2A0	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2A1	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R2A2	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R2A3	103P493O30	CHIP METAL RESISTOR	1/16W 2.2kΩ-F
R2A4	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2A5	103P493O40	CHIP METAL RESISTOR	1/16W 2.4kΩ-F
R2A6	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2A7	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R2A8	103P492O90	CHIP RESISTOR	1/16W1.5kΩ-F
R2A9	103P493O90	CHIP METAL RESISTOR	1/16W3.9kΩ-F
R2B0	103P494O30	CHIP METAL RESISTOR	1/16W 5.6kΩ-F
R2B1	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R2B2	103P504O00	CHIP RESISTOR	1/16W 18kΩ-J
R2B3	103P493O90	CHIP METAL RESISTOR	1/16W3.9kΩ-F
R2B4	103P502O20	CHIP RESISTOR	1/16W 560Ω-J
R2B5	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2B6	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2B7	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2B8	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R2B9	103P502O10	CHIP RESISTOR	1/16W 470Ω-J
R2C0	103P504O20	CHIP RESISTOR	1/16W 27kΩ-J
R2C1	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2C2	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2C3	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J
R2C4	103P406O70	CHIP METAL RESISTOR	1/10W 3.3MΩ-J

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R2C5	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R2C8	103P491O50	CHIP METAL RESISTOR	1/16W 390Ω-F
R2C9	103P491O90	CHIP METAL RESISTOR	1/16W 560Ω-F
R2D0	103P502O70	CHIP RESISTOR	1/16W 1.5kΩ-J
R2D1	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R2D3	103P502O90	CHIP RESISTOR	1/16W 2.2kΩ-J
R2D4	103P502O90	CHIP RESISTOR	1/16W 2.2kΩ-J
R2D5	103P502O90	CHIP RESISTOR	1/16W 2.2kΩ-J
R2E8	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2F0	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2F4	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R2F5	103P494O30	CHIP METAL RESISTOR	1/16W 5.6kΩ-F
R2F7	103P495O50	CHIP METAL RESISTOR	1/16W 18kΩ-F
R2F9	103P505O00	CHIP RESISTOR	1/16W 120kΩ-J
R2001	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2002	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R2003	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2004	103P492O90	CHIP RESISTOR	1/16W1.5kΩ-F
R2006	103P502O30	CHIP RESISTOR	1/16W 680Ω-J
R2007	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R2008	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2009	103P491O30	CHIP METAL RESISTOR	1/16W 330Ω-F
R2010	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R2012	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2013	103P492O70	CHIP METAL RESISTOR	1/16W 1.2kΩ-F
R2014	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R2015	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2017	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R2018	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R2019	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2020	103P491O50	CHIP METAL RESISTOR	1/16W 390Ω-F
R2021	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2024	103P492O10	CHIP METAL RESISTOR	1/16W 680Ω-F
R2025	103P492O20	CHIP METAL RESISTOR	1/16W 750Ω-F
R2026	103P492O70	CHIP METAL RESISTOR	1/16W 1.2kΩ-F
R2027	103P491O70	CHIP METAL RESISTOR	1/16W 470Ω-F
R2028	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R2029	103P491O50	CHIP METAL RESISTOR	1/16W 390Ω-F
R2031	103P502O20	CHIP RESISTOR	1/16W 560Ω-J
R2032	103P503O90	CHIP RESISTOR	1/16W 15kΩ-J
R2033	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R2034	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R2035	103P493O50	CHIP METAL RESISTOR	1/16W 2.7kΩ-F
R2051	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2053	103P491O30	CHIP METAL RESISTOR	1/16W 330Ω-F
R2055	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R2056	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R300	103P504O20	CHIP RESISTOR	1/16W 27kΩ-J
R301	103P503O80	CHIP RESISTOR	1/16W 12kΩ-J
R302	103P505O50	CHIP RESISTOR	1/16W 330kΩ-J
R304	103P490O80	CHIP METAL RESISTOR	1/16W 200Ω-F
R305	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R306	103P504O10	CHIP RESISTOR	1/16W 22kΩ-J
R308	103P496O60	CHIP METAL RESISTOR	1/16W 51kΩ-F
R351	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R352	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R357	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J
R358	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J
R365	103P500O90	CHIP RESISTOR	1/20W 47Ω-J
R366	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J
R367	103P508O40	CHIP RESISTOR	1/16W 2.2Ω-K
R368	103P503O20	CHIP RESISTOR	1/16W 3.9kΩ-J
R3A2	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R3A3	103P502O30	CHIP RESISTOR	1/16W 680Ω-J
R3A4	103P503O50	CHIP RESISTOR	1/16W 6.8kΩ-J
R3A8	103P505O60	CHIP RESISTOR	1/16W 390kΩ-J
R3A9	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R3B0	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3B1	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R3B2	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3B3	103P503O60	CHIP RESISTOR	1/16W 8.2kΩ-J
R3B4	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R3C1	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3C2	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3C3	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R3C4	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3C5	103P494O40	CHIP METAL RESISTOR	1/16W 6.2kΩ-F
R3C6	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R3F0	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R3L0	103P503O00	CHIP RESISTOR	1/16W 2.7kΩ-J
R5A1	103P504O00	CHIP RESISTOR	1/16W 18kΩ-J
R5A3	103P504O00	CHIP RESISTOR	1/16W 18kΩ-J
R5A8	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R5A9	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5B0	103P502O80	CHIP RESISTOR	1/16W 1.8kΩ-J
R5B2	103P502O20	CHIP RESISTOR	1/16W 560Ω-J
R5B3	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R5B5	103P505O30	CHIP RESISTOR	1/16W 220kΩ-J
R5B8	103P505O00	CHIP RESISTOR	1/16W 120kΩ-J
R5B9	103P505O00	CHIP RESISTOR	1/16W 120kΩ-J
R5C0	103P505O00	CHIP RESISTOR	1/16W 120kΩ-J
R5C1	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R5C6	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R5D4	103P505O30	CHIP RESISTOR	1/16W 220kΩ-J
R5D5	103P506O10	CHIP RESISTOR	1/16W 1MΩ-J
R5D6	103P505O70	CHIP RESISTOR	1/16W 470kΩ-J
R5D7	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R5D9	103P503O40	CHIP RESISTOR	1/16W 5.6kΩ-J
R5E0	103P503O20	CHIP RESISTOR	1/16W 3.9kΩ-J
R5E1	103P503O60	CHIP RESISTOR	1/16W 8.2kΩ-J
R5E2	103P504O90	CHIP RESISTOR	1/16W 100kΩ-J
R5E5	103P502O40	CHIP RESISTOR	1/16W 820Ω-J
R5E7	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R5F7	103P503O00	CHIP RESISTOR	1/16W 2.7kΩ-J
R5F8	103P503O00	CHIP RESISTOR	1/16W 2.7kΩ-J
R5G1	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5G5	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5G6	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5G7	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5G8	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5G9	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5L0	103P505O30	CHIP RESISTOR	1/16W 220kΩ-J
R5L2	103P503O30	CHIP RESISTOR	1/16W 4.7kΩ-J

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R5L4	103P504O90	CHIP RESISTOR	1/16W 100kΩ-J
R5P0	103P502O70	CHIP RESISTOR	1/16W 1.5kΩ-J
R5P1	103P502O10	CHIP RESISTOR	1/16W 470Ω-J
R5P2	103P506O10	CHIP RESISTOR	1/16W 1MΩ-J
R5P6	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R5R1	103P493O50	CHIP METAL RESISTOR	1/16W 2.7kΩ-F
R5R2	103P502O60	CHIP RESISTOR	1/16W 1.2kΩ-J
R5R3	103P503O90	CHIP RESISTOR	1/16W 15kΩ-J
R5R6	103P493O30	CHIP METAL RESISTOR	1/16W 2.2kΩ-F
R5R9	103P494O80	CHIP METAL RESISTOR	1/16W9.1kΩ-F
R5S0	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R5S3	103P503O90	CHIP RESISTOR	1/16W 15kΩ-J
R5S4	103P504O40	CHIP RESISTOR	1/16W 39kΩ-J
R5S6	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R5S8	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R5T5	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R5T6	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R5W1	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R5X8	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R5X9	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R6A0	103P493O10	CHIP METAL RESISTOR	1/16W 1.8kΩ-F
R6A1	103P493O00	CHIP METAL RESISTOR	1/16W 1.6kΩ-F
R6A2	103P502O80	CHIP RESISTOR	1/16W 1.8kΩ-J
R6A3	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R6A4	103P491O70	CHIP METAL RESISTOR	1/16W 470Ω-F
R6A5	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R6A6	103P492O90	CHIP RESISTOR	1/16W1.5kΩ-F
R6A7	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6A8	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6A9	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6B0	103P491O70	CHIP METAL RESISTOR	1/16W 470Ω-F
R6B1	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R6B2	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6B3	103P492O90	CHIP RESISTOR	1/16W1.5kΩ-F
R6B4	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6B5	103P493O70	CHIP METAL RESISTOR	1/16W 3.3kΩ-F
R6B6	103P490O70	CHIP METAL RESISTOR	1/16W 180Ω-F
R6B7	103P492O30	CHIP METAL RESISTOR	1/16W 820Ω-F
R6C1	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6C2	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R6C3	103P502O90	CHIP RESISTOR	1/16W 2.2kΩ-J
R6C4	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6C5	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6C6	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R6C7	103P504O20	CHIP RESISTOR	1/16W 27kΩ-J
R6C8	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6C9	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6D0	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6D1	103P502O40	CHIP RESISTOR	1/16W 820Ω-J
R6D2	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R6D3	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6D4	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R6D5	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6D9	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R6E1	103P501O30	CHIP RESISTOR	1/16W 100Ω-J
R6E4	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F
R6E5	103P492O50	CHIP METAL RESISTOR	1/16W 1kΩ-F

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R6E6	103P502O30	CHIP RESISTOR	1/16W 680Ω-J
R6E7	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R6E8	103P492O60	CHIP METAL RESISTOR	1/16W1.1kΩ-F
R6E9	103P503O40	CHIP RESISTOR	1/16W 5.6kΩ-J
R6F0	103P502O80	CHIP RESISTOR	1/16W 1.8kΩ-J
R6F1	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6F2	103P503O20	CHIP RESISTOR	1/16W 3.9kΩ-J
R6F3	103P503O90	CHIP RESISTOR	1/16W 15kΩ-J
R6F5	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6F6	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6F7	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6F8	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R6F9	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R6G0	103P500O80	CHIP RESISTOR	1/16W 39Ω-J
R6G1	103P500O80	CHIP RESISTOR	1/16W 39Ω-J
R6G2	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6G3	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6G4	103P509O90	CHIP RESISTOR	1/16W 75Ω-J
R6G5	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R6G6	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R6H0	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R6H1	103P503O10	CHIP RESISTOR	1/16W 3.3kΩ-J
R6H2	103P502O30	CHIP RESISTOR	1/16W 680Ω-J
R6H4	103P502O30	CHIP RESISTOR	1/16W 680Ω-J
R6J1	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6J2	103P491O90	CHIP METAL RESISTOR	1/16W 560Ω-F
R6J3	103P492O30	CHIP METAL RESISTOR	1/16W 820Ω-F
R6J4	103P501O90	CHIP RESISTOR	1/16W 330Ω-J
R6J5	103P505O30	CHIP RESISTOR	1/16W 220kΩ-J
R6J6	103P509O50	CHIP RESISTOR	0Ω (RM1608)
R6J7	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R6J8	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6J9	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R6K0	103P501O70	CHIP RESISTOR	1/16W 220Ω-J
R6K1	103P491O90	CHIP METAL RESISTOR	1/16W 560Ω-F
R6K2	103P492O00	CHIP RESISTOR	1/16W 620Ω-F
R6K3	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R6K4	103P506O10	CHIP RESISTOR	1/16W 1MΩ-J
R6K5	103P506O10	CHIP RESISTOR	1/16W 1MΩ-J
R6K6	103P503O60	CHIP RESISTOR	1/16W 8.2kΩ-J
R6K9	103P502O50	CHIP RESISTOR	1/16W 1kΩ-J
R8A0	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R8A1	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R8A2	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R8A3	103P504O30	CHIP RESISTOR	1/16W 33kΩ-J
R8A4	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R8A5	103P504O50	CHIP RESISTOR	1/16W 47kΩ-J
R8E0	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E1	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E2	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E3	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E4	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E5	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E6	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E7	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R8E8	103P401O00	CHIP RESISTOR	1/10W 56Ω-J

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
R8E9	103P401O00	CHIP RESISTOR	1/10W 56Ω-J
R910	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R911	103P492O70	CHIP METAL RESISTOR	1/16W 1.2kΩ-F
R916	103P491O90	CHIP METAL RESISTOR	1/16W 560Ω-F
R917	103P491O60	CHIP METAL RESISTOR	1/16W 430Ω-F
R918	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R919	103P504O80	CHIP RESISTOR	1/16W 82kΩ-J
R925	103P502O90	CHIP RESISTOR	1/16W 2.2kΩ-J
R943	103P503O70	CHIP RESISTOR	1/16W 10kΩ-J
R9L1	103P505O50	CHIP RESISTOR	1/16W 330kΩ-J
RJ01	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ03	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ04	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ05	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ06	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ07	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ08	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ09	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ10	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ11	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ12	103P509O50	CHIP RESISTOR	0Ω (RM1608)
RJ16	103P509O50	CHIP RESISTOR	0Ω (RM1608)
	CAPACITORS AND TRIMMERS		
C103	141P142O50	CHIP CAPACITOR	B25V/16V 0.022μF-K
C2A0	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2A2	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2A3	154P343O50	CHIP CAPACITOR	CH50V 100pF-J
C2A5	154P341O90	CHIP CAPACITOR	CH50V 22pF-J
C2A6	154P340O50	CHIP CAPACITOR	CH50V 4pF-C
C2A7	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2A8	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2A9	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2B0	154P343O90	CHIP CAPACITOR	CH50V 150pF-J
C2B1	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2B2	154P342O10	CHIP CAPACITOR	CH50V 27pF-J
C2B3	154P341O30	CHIP CAPACITOR	CH50V 12pF-J
C2B4	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2B5	154P342O10	CHIP CAPACITOR	CH50V 27pF-J
C2C0	141P142O50	CHIP CAPACITOR	B25V/16V 0.022μF-K
C2C1	154P343O30	CHIP CAPACITOR	CH50V 82pF-J
C2C2	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2C3	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2C4	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2C5	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2C6	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2C9	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2D0	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2D3	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2D5	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2D6	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2D9	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2E1	154P340O70	CHIP CAPACITOR	CH50V 6pF-C
C2E2	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2E4	141P142O50	CHIP CAPACITOR	B25V/16V 0.022μF-K
C2E7	141P141O70	CHIP CAPACITOR	B50V 4700pF-K
C2E8	141P142O70	CHIP CAPACITOR	B25V/16V 0.033μF-K

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
C2F3	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2F7	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G0	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G3	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G4	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G5	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G6	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G7	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G8	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2G9	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2H0	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C2H3	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2H4	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2H8	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C2K0	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2K1	154P342O50	CHIP CAPACITOR	CH50V 39pF-J
C2001	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2003	154P342O30	CHIP CAPACITOR	CH50V 33pF-J
C2004	154P343O10	CHIP CAPACITOR	CH50V 68pF-J
C2006	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2008	154P343O10	CHIP CAPACITOR	CH50V 68pF-J
C2010	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2012	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2013	154P344O30	CHIP CAPACITOR	CH50V 220pF-J
C2014	154P344O90	CHIP CAPACITOR	CH25V 390pF-J
C2015	154P340O70	CHIP CAPACITOR	CH50V 6pF-C
C2016	154P343O10	CHIP CAPACITOR	CH50V 68pF-J
C2017	154P343O10	CHIP CAPACITOR	CH50V 68pF-J
C2018	154P342O30	CHIP CAPACITOR	CH50V 33pF-J
C2019	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2021	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2022	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2023	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2024	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2026	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2027	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2028	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2029	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2030	154P345O50	CHIP CAPACITOR	CH25V 680pF-J
C2032	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C2033	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C2036	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2038	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C2041	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C304	141P142O10	CHIP CAPACITOR	B25V 0.01μF-K
C306	141P139O70	CHIP CAPACITOR	B16V 0.22μF-K
C308	141P141O60	CHIP CAPACITOR	B50V 3900pF-K
C309	141P140O80	CHIP CAPACITOR	B50V 820pF-K
C312	141P144O20	CHIP CAPACITOR	F16V 0.1μF-Z
C350	141P140O10	CHIP CAPACITOR	B50V 220pF-K
C357	141P142O50	CHIP CAPACITOR	B25V/16V 0.022μF-K
C358	141P141O70	CHIP CAPACITOR	B50V 4700pF-K
C379	181P212O60	ELECTROLYTIC CAPACITOR	04W 16V 47μF-M
C3A7	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K
C3A9	141P139O70	CHIP CAPACITOR	B16V 0.22μF-K
C3B0	141P139O70	CHIP CAPACITOR	B16V 0.22μF-K
C3B6	141P143O30	CHIP CAPACITOR	B16V 0.1μF-K

: Critical Components

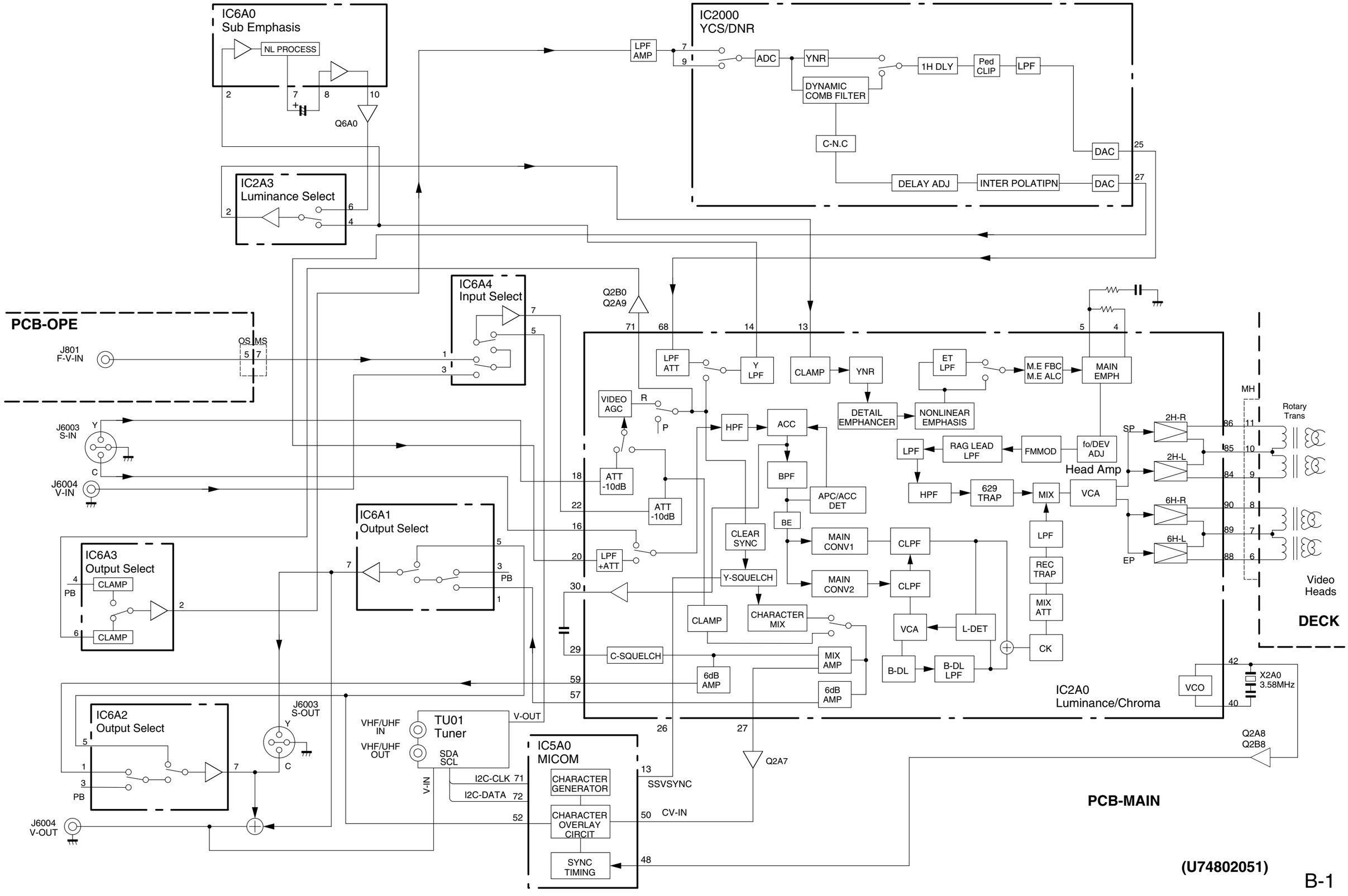
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
C3B8	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3B9	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3C0	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3C8	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3E4	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C3F2	141P142O50	CHIP CAPACITOR	B25V/16V 0.022µF-K
C3F4	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3F5	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C3G1	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C3G3	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C3J0	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3J1	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3J2	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C3J3	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C3J4	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C3J6	141P142O30	CHIP CAPACITOR	B25V/16V 0.015µF-K
C3J7	141P142O30	CHIP CAPACITOR	B25V/16V 0.015µF-K
C3L0	141P142O90	CHIP CAPACITOR	B25V/16V 0.047µF-K
C5A0	189P197O20	ELE DOUBLE LAYER CAPACITOR	FM0H473Z
C5A6	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C5A7	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C5B5	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C5B6	154P341O70	CHIP CAPACITOR	CH50V 18pF-J
C5B7	154P341O50	CHIP CAPACITOR	CH50V 15pF-J
C5B8	154P341O70	CHIP CAPACITOR	CH50V 18pF-J
C5B9	154P341O70	CHIP CAPACITOR	CH50V 18pF-J
C5C0	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5C1	154P342O70	CHIP CAPACITOR	CH50V 47pF-J
C5C9	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5D2	141P141O70	CHIP CAPACITOR	B50V 4700pF-K
C5D3	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5D4	141P143O80	CHIP CAPACITOR	F50V 0.01µF-Z
C5E0	141P143O90	CHIP CAPACITOR	F50V 0.022µF-Z
C5E2	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C5E3	154P343O90	CHIP CAPACITOR	CH50V 150pF-J
C5E4	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C5E5	141P140O60	CHIP CAPACITOR	B50V 560pF-K
C5E6	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C5J9	141P143O90	CHIP CAPACITOR	F50V 0.022µF-Z
C5L0	141P142O90	CHIP CAPACITOR	B25V/16V 0.047µF-K
C5R1	141P140O80	CHIP CAPACITOR	B50V 820pF-K
C5S0	141P141O70	CHIP CAPACITOR	B50V 4700pF-K
C5S1	141P142O20	CHIP CAPACITOR	B25V/16V 0.012µF-K
C5S3	141P143O00	CHIP CAPACITOR	B25/16V 0.056µF-K
C5S4	141P143O00	CHIP CAPACITOR	B25/16V 0.056µF-K
C5S5	141P140O90	CHIP CAPACITOR	B50V 1000pF-K
C5S6	141P141O30	CHIP CAPACITOR	B50V 2200pF-K
C5S9	141P143O30	CHIP CAPACITOR	B16V 0.1µF-K
C5T5	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5T6	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5U0	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5U1	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C5V2	154P342O90	CHIP CAPACITOR	CH50V 56pF-J
C6A4	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6A5	181P210O60	ELECTROLYTIC CAPACITOR	04W 6.3V 330µF-M
C6A6	154P344O50	CHIP CAPACITOR	CH25V 270pF-J
C6A7	154P344O50	CHIP CAPACITOR	CH25V 270pF-J
C6A8	154P343O90	CHIP CAPACITOR	CH50V 150pF-J
C6A9	154P343O30	CHIP CAPACITOR	CH50V 82pF-J
C6B0	154P344O50	CHIP CAPACITOR	CH25V 270pF-J
C6B1	154P343O30	CHIP CAPACITOR	CH50V 82pF-J
C6B2	154P344O50	CHIP CAPACITOR	CH25V 270pF-J
C6B3	154P344O50	CHIP CAPACITOR	CH25V 270pF-J
C6B4	154P344O30	CHIP CAPACITOR	CH50V 220pF-J
C6C1	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6C2	154P342O90	CHIP CAPACITOR	CH50V 56pF-J
C6C3	154P341O70	CHIP CAPACITOR	CH50V 18pF-J
C6C6	154P342O10	CHIP CAPACITOR	CH50V 27pF-J
C6C7	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6C8	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6C9	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6D0	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6D3	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6D4	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6D5	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6D8	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6E2	181P352O70	ELECTROLYTIC CAPACITOR	04W 16V 470µF-M
C6E4	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6E5	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6E7	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6E9	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6F2	181P350O60	ELECTROLYTIC CAPACITOR	CE04W 6.3V 1000µF-M
C6F3	141P142O10	CHIP CAPACITOR	B25V 0.01µF-K
C6F4	181P350O60	ELECTROLYTIC CAPACITOR	CE04W 6.3V 1000µF-M
C6F5	154P342O30	CHIP CAPACITOR	CH50V 33pF-J
C6G1	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6J0	141P144O20	CHIP CAPACITOR	F16V 0.1µF-Z
C6J1	154P344O10	CHIP CAPACITOR	CH50V 180pF-J
C6J3	154P343O50	CHIP CAPACITOR	CH50V 100pF-J
C901	189P193O30	C-M-P-AC	AC125V 0.068µF-M
C902	189P193O30	C-M-P-AC	AC125V 0.068µF-M
C907	181P355O50	ELECTROLYTIC CAPACITOR	04W 50V 10µF-M
C908	189P215O90	AC CERAMIC CAPACITOR	AC250V E2200pF-M
C915	181P355O10	ELECTROLYTIC CAPACITOR	04W 50V 1µF-M
C918	181P355O60	ELECTROLYTIC CAPACITOR	04W 50V 22µF-M
C921	181P350O40	ELECTROLYTIC CAPACITOR	6.3V 330µF-M
C926	181P352O30	ELECTROLYTIC CAPACITOR	16V 47µF-M
C927	181P352O30	ELECTROLYTIC CAPACITOR	16V 47µF-M
C929	181P352O80	ELECTROLYTIC CAPACITOR	04W 16V 1000µF-M
C936	181P351O50	ELECTROLYTIC CAPACITOR	10V 220µF-M
C9Y1	189P215O90	AC CERAMIC CAPACITOR	AC250V E2200pF-M
C9Y2	189P215O90	AC CERAMIC CAPACITOR	AC250V E2200pF-M
	SWITCHES		
S5B1	432P166O10	KEY BOARD SWITCH	RESET
S5S0	439P045O10	SWITCH	S-SW MPU10184MLBO
S810	432P203O30	KEY BOARD SWITCH	EJECT
S811	432P203O30	KEY BOARD SWITCH	POWER
S812	432P203O30	KEY BOARD SWITCH	SP/EP
S8A0	432P203O30	KEY BOARD SWITCH	REC
S8A1	432P203O30	KEY BOARD SWITCH	FF
S8A2	432P203O30	KEY BOARD SWITCH	PAUSE
S8A3	432P203O30	KEY BOARD SWITCH	PB

: Critical Components

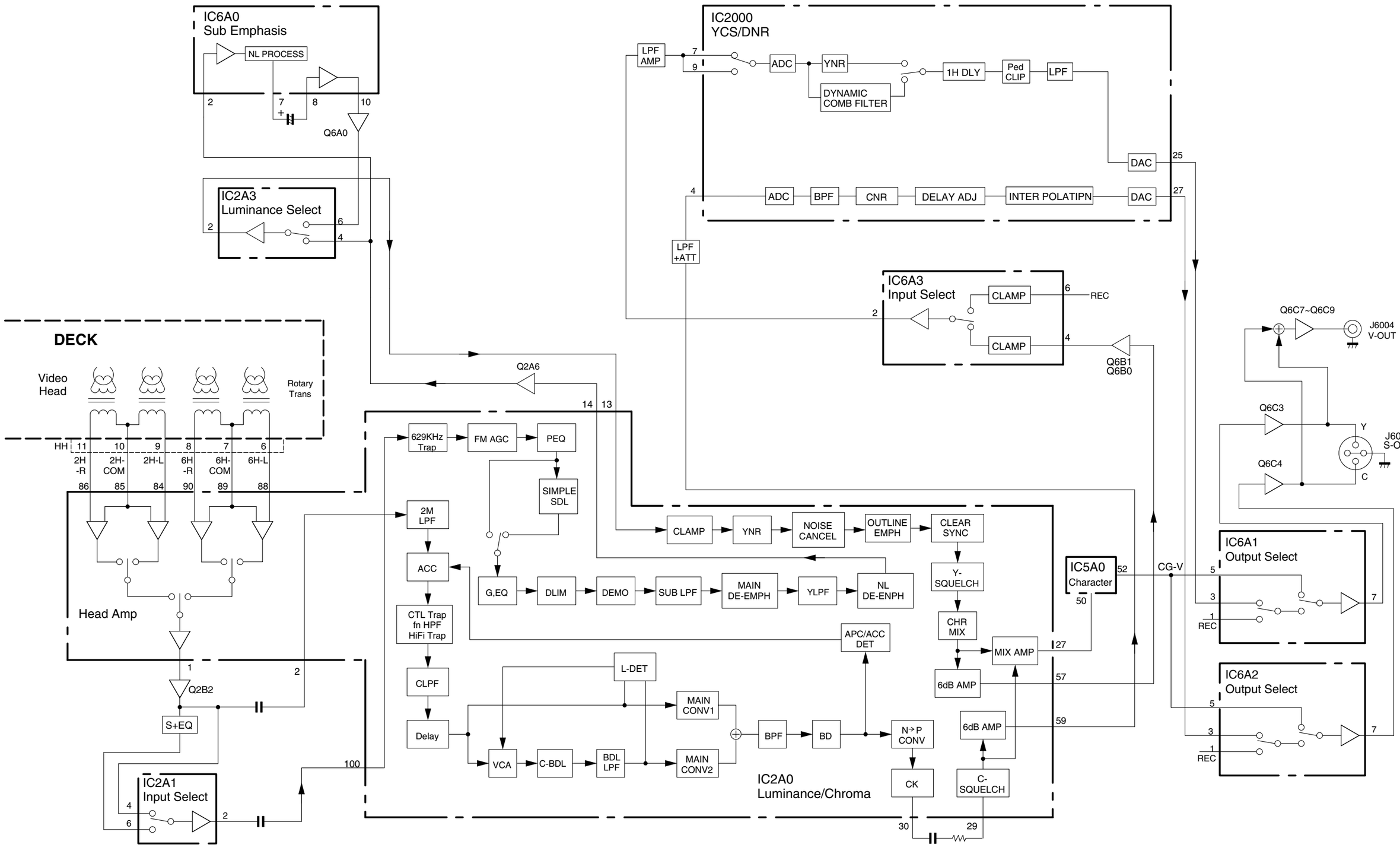
SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION
S8A4	432P203O30	KEY BOARD SWITCH	STOP
S8A5	432P203O30	KEY BOARD SWITCH	REW
S8A6	432P203O30	KEY BOARD SWITCH	CH-UP
S8A7	432P203O30	KEY BOARD SWITCH	CH-DN
	MISCELLANEOUS		
	243C156O20	CARD LEAD WIRE	(MS OS) 11P L=100
	243C193O30	CARD LEAD WIRE	(MD DD) 7PIN L=120
	243C193O50	CARD LEAD WIRE	(MA DA) 7PIN L=160
	440B134O10	PIN JACK BOARD	(J6004) 6PIN
	451C227O20	RCA PIN JACK	(J803) RED
	451C227O30	RCA PIN JACK	(J802) WHITE
	451C234O20	RCA PIN JACK	(J801)
	621C525O10	LED HOLDER	(D5B4)
	621C527O10	PHOTO HOLDER	(Q5A2)
	621C564O10	LED HOLDER R	(Q5A1)
	621C564O10	LED HOLDER R	(Q5A0)
F901	283D130O30	FUSE	S1.6A 125V
PC901	268D024O30	PHOTO COUPLER	ON3131-R
Q5A0	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
Q5A1	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
Q5A2	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
Q5A6	268P092O10	PHOTO TRANSISTOR	PT492FK1
Q5A7	268P092O10	PHOTO TRANSISTOR	PT492FK1
Q5A8	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
Q5A9	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
Q5B0	268P076O20	PHOTO TRANSISTOR	SPS-1119C-BC-T
RV901	265P100O20	VARISTOR	ERZV10D271CS
TU01	295P515O10	TUNER	VD025AW
V8A0	262P067O10	LED DISPLAY	
X2A0	285P412O10	CRYSTAL RESONATOR	3.57955MHz
X5A0	285P054O10	CRYSTAL RESONATOR	32.768kHz
X5A1	285P368O40	CRYSTAL RESONATOR	12.000MHz
Z5A0	939P713O30	PREAMP UNIT	TSOP1833XG1
	PRINTED CIRCUIT BOARD ASSY'S		
	925B145O01	MAIN PCB ASSY	
	927C332O01	OPE PCB ASSY	

SYMBOL No.	PARTS No.	PARTS NAME	DESCRIPTION

Luminance Record, Chroma Record HS-U748



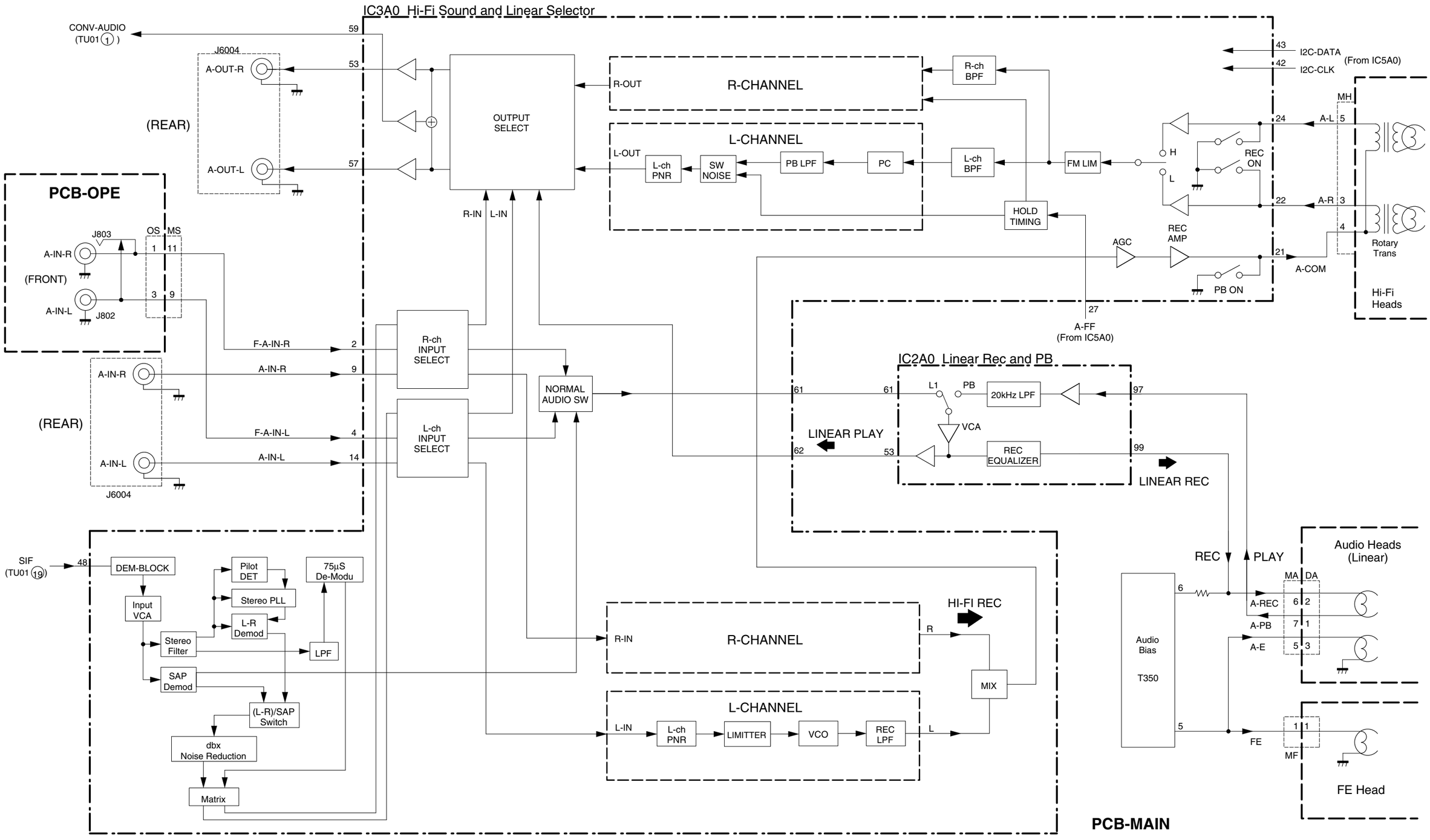
Luminance Playback, Chroma Playback HS-U748



PCB-MAIN

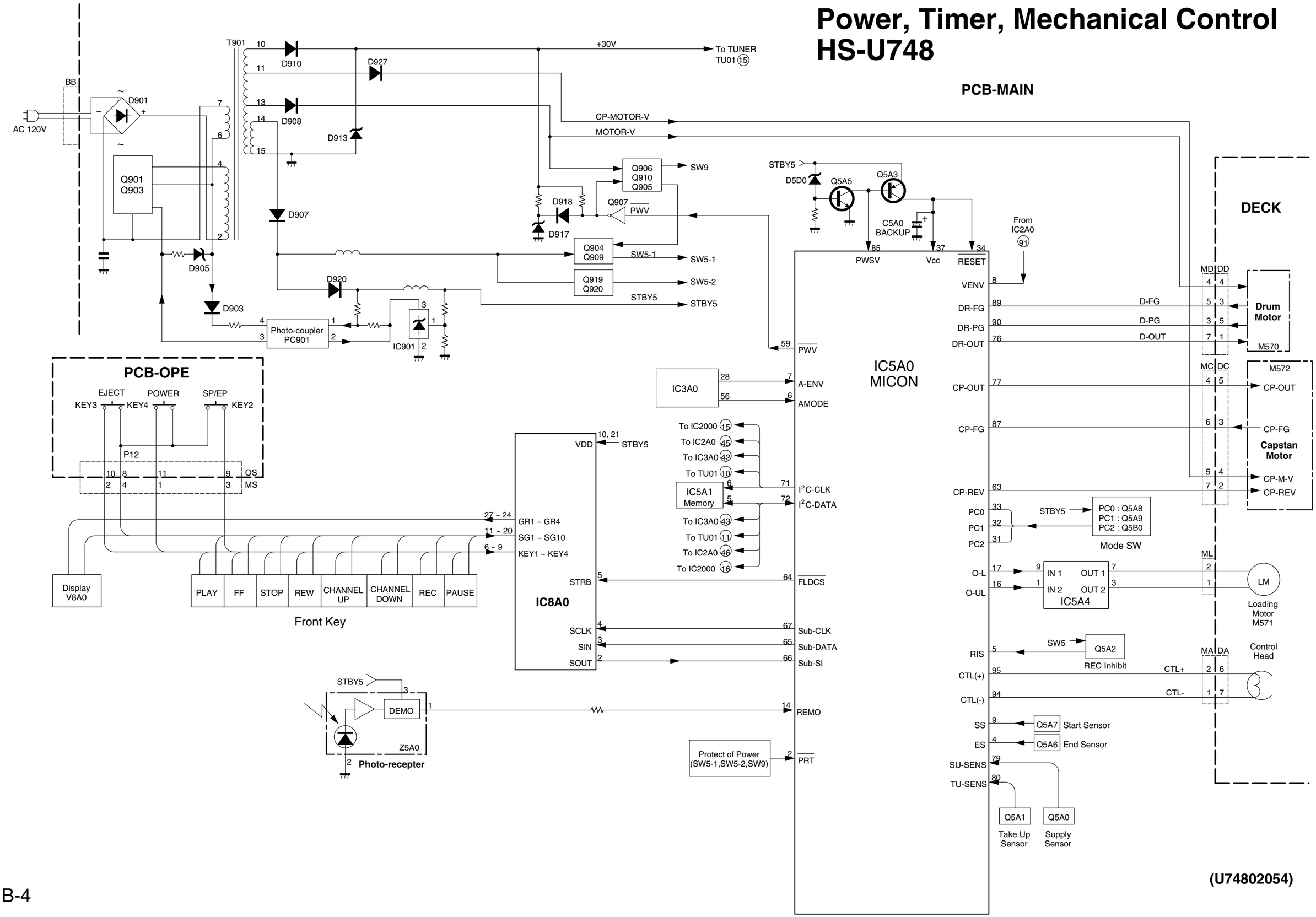
(U74802052)

Hi-Fi and Linear Sound HS-U748



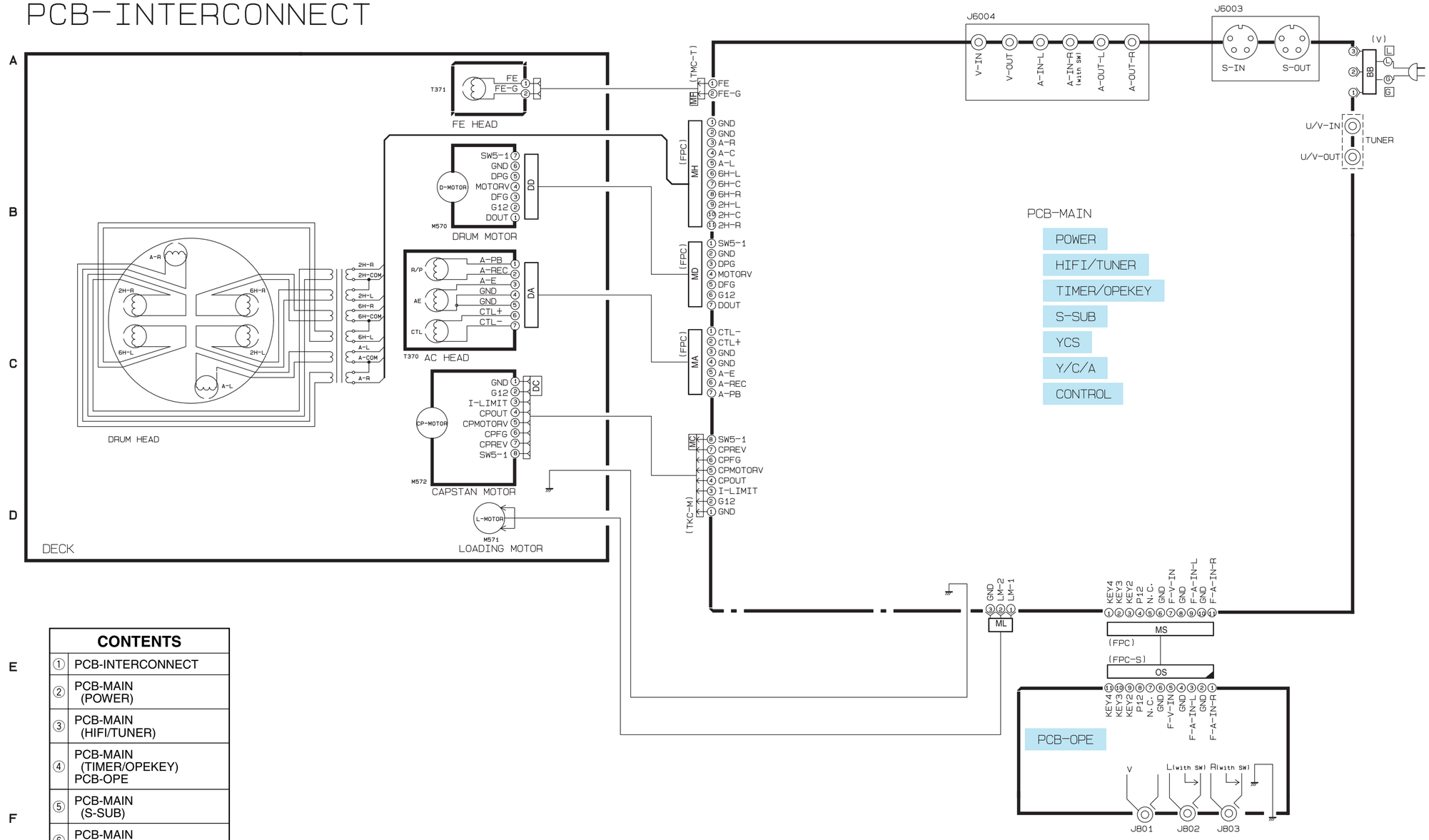
(U74802053)

Power, Timer, Mechanical Control
HS-U748



(U74802054)

PCB-INTERCONNECT



CONTENTS

①	PCB-INTERCONNECT
②	PCB-MAIN (POWER)
③	PCB-MAIN (HIFI/TUNER)
④	PCB-MAIN (TIMER/OPEKEY) PCB-OPE
⑤	PCB-MAIN (S-SUB)
⑥	PCB-MAIN (YCS)
⑦	PCB-MAIN (Y/C/A) REMOTE HAND UNIT
⑧	PCB-MAIN (CONTROL)
⑨	PRINTED CIRCUIT BOARD PARTS LAYOUT

SCHEMATIC DIAGRAMS

NOTE
1. Each voltage should be within ± 20% of the DC voltages measured with a digital voltmeter.
2. The voltages parenthesised on 2H recording mode.
   While those without parenthesised on 2H play back mode.
3. Waveforms were taken with standard color bar signal.
4. TP6A, etc. show Test Points.
5. Capacitors

Value	Not indicated	pF, for numbers more than 1 µF, for numbers less than 1	
Dielectric Strength	Not indicated : 50V		
Tolerance	Not indicated = ±10% (No Tolerance is indicated for electrolytic capacitors and ± 20%)		
	G = ± 2%	N = ± 30%	Q = + 30% − 10%	C = ± 0.25pF
	J = ± 5%			D = ± 0.5pF
	K = ± 10%	P = + 100% − 0%	Z = + 80% − 20%	F = ± 1pF
	M = ± 20%			G = ± 2pF

Sort

I	Parts except for chips	Not indicated	: Ceramic capacitor
		(MF)	: Polyester capacitor
		(PP)	: Polypropylene film capacitor
		(ALM)	: Aluminus electrolytic capacitor
		(TF)	: Twin film capacitor
		(SC)	: Semiconductor ceramic capacitor
		(MP)	: Metalized paper capacitor
		(MPP)	: Metalized plastic film capacitor
		(MMF)	: Metalized polyester capacitor
		(MF,PP)	: Polyester polypropylene film capacitor
		(PS)	: Styrol capacitor
		(TAN) or (TANT)	: Tantalum capacitor
		—⊣⊢—	: Electrolytic capacitor
		(BP) or (NP)	: Non polarized electrolytic capacitor
II	Chips	Not indicated	: Ceramic capacitor chip
		—⊣⊢—	: Electrolytic capacitor chip
		(BP) or (NP)	: Non polarized electrolytic capacitor chip

Characteristic (only ceramic capacitor)	Not indicated : F or B (high dielectric percentage) CH,SL,etc : Temperature compensating types

6. Resistors

Value	Not indicated = Ω K = kΩ (1000Ω) M = MΩ (1000kΩ)	
Wattage	Parts except for chips	Not indicated = 1/4W or 1/6W
	Chips	Not indicated = 1/10W
Tolerance	Not indicated = ± 5% D = ± 0.5% J = ± 5% F = ± 1% K = ± 10%	

Sort

I	Parts except for chips	Not indicated	: Carbon resistor
		(S)	: Fixed composition resistor
		(MB)	: Metal oxide film resistor (type B)
		(CE)	: Cemented resistor
		(W)	: Wire wound resistor
		(M)	: Metal film resistor
		(MPC)	: Metal plate cement resistor
		(ML)	: Metal liner resistor
II	Chips	Not indicated	: Chip resistor

7. This is basic schematic diagram.
   Some sets may be subject to modification according to engineering imporovement.

SPECIFIC SYMBOL

Zener Diode	Fusible Resistor
Varicap	Crystal unit
Positive Thermistor	Air Gap
Thermistor	Part (resistor) attached on the copper-foil side of PCB
Photo Diode	Ceramic filter
LED	

8. Correspondence of the units in the Schematic Diagrams to the SI units.

	Schematic Diagram	SI
Kiro	K	k
Hertz	HZ	Hz
Pico	P	p

SHADED COMPONENTS HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS READ CAREFULLY THE PRODUCT SAFETY NOTICE IN THE SERVICE MANUAL.
DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

(POWER) PCB-MAIN

TO Y/C/A | TO Y/C/A | TO HIFI/TUNER | TO S-SUB | TO YCS

SW5-1 | SW5-2 SW9 | +30V SW9 SW5-2 | SW9 SW5-2 | SW5-2

TO TIMER/OPEKEY: STBY5

TO CONTROL: PWV, STBY5, SW5-1, PRT, MOTORV, CPMOTORV, G12

Q901 COLLECTOR POWER ON — 350V(p-p) (TIME/DIV 5us)

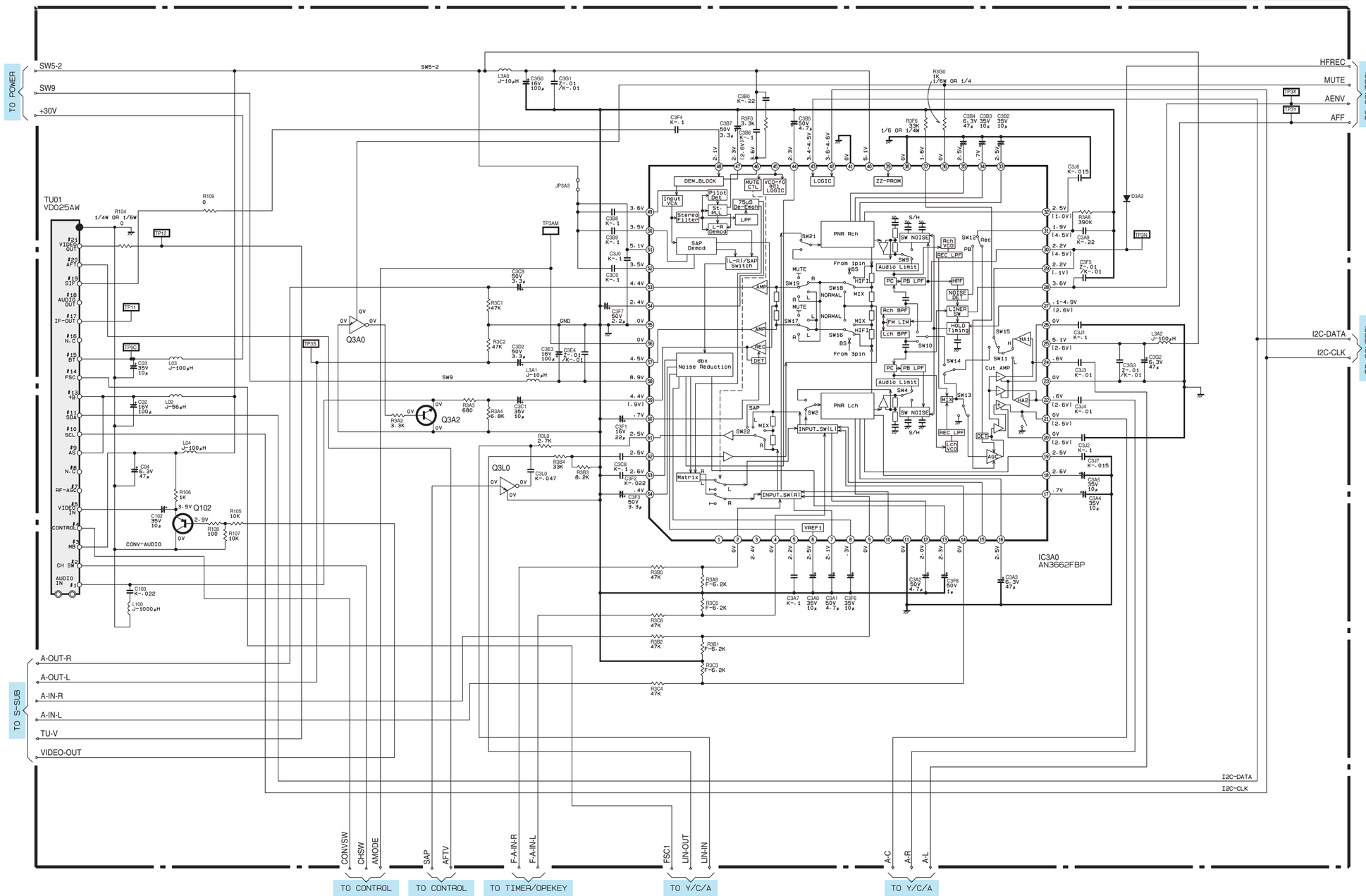
NOTE
UNLESS OTHERWISE SPECIFIED DTA124EKA/RT1P241C
ALL RESISTORS ARE 1/16W
ALL DIODES ARE 1SS254/1SS133
ALL NPN TRANSISTORS ARE 2SC5395-G/2SC1740S-E
ALL PNP TRANSISTORS ARE 2SA1993-E, F/2SA933S-R, S

shows 22K 22K

DTC124EKA/RT1N241C shows 22K 22K

IC901 HA17431PA

(HIFI/TUNER) PCB-MAIN



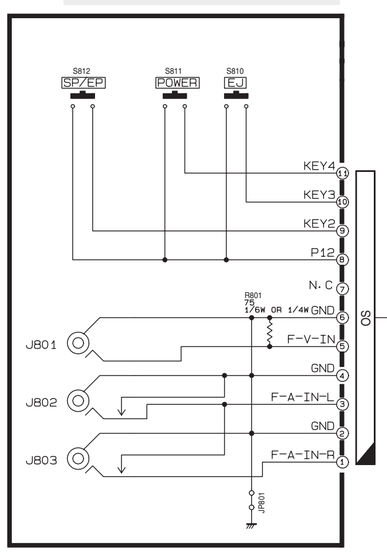
DTC124EKA/RT1N241C

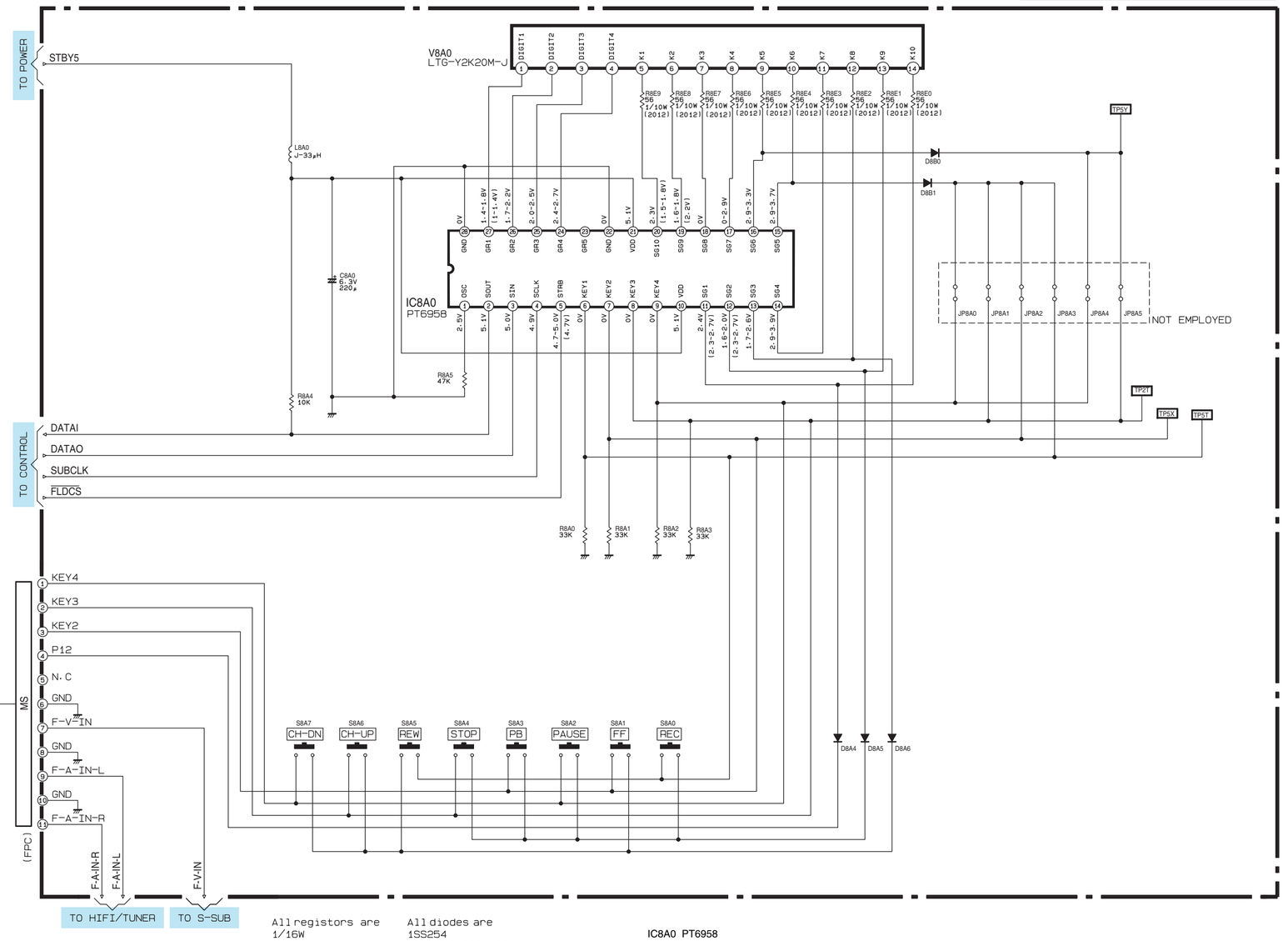
DTA124EKA/RT1P241C

Note:
Unless otherwise specified.
All PNP transistors are 2SA1037AK-R, S
All NPN transistors are 2SC2412K-R, S/2SD601AI-R, S
All diodes are 1SS254/1SS133
All resistors are 1/16W
All PNP digital transistors are DTA124EKA/RT1P241C
All NPN digital transistors are DTC124EKA/RT1N241C

(TIMER/OPEKEY) PCB-MAIN

PCB-OPE

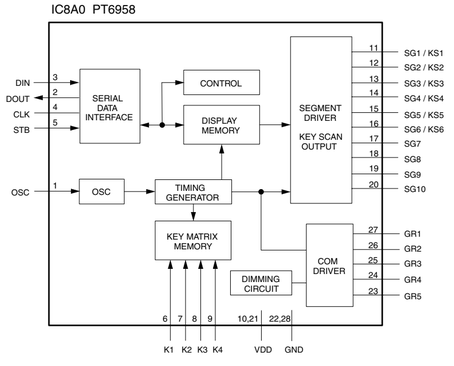




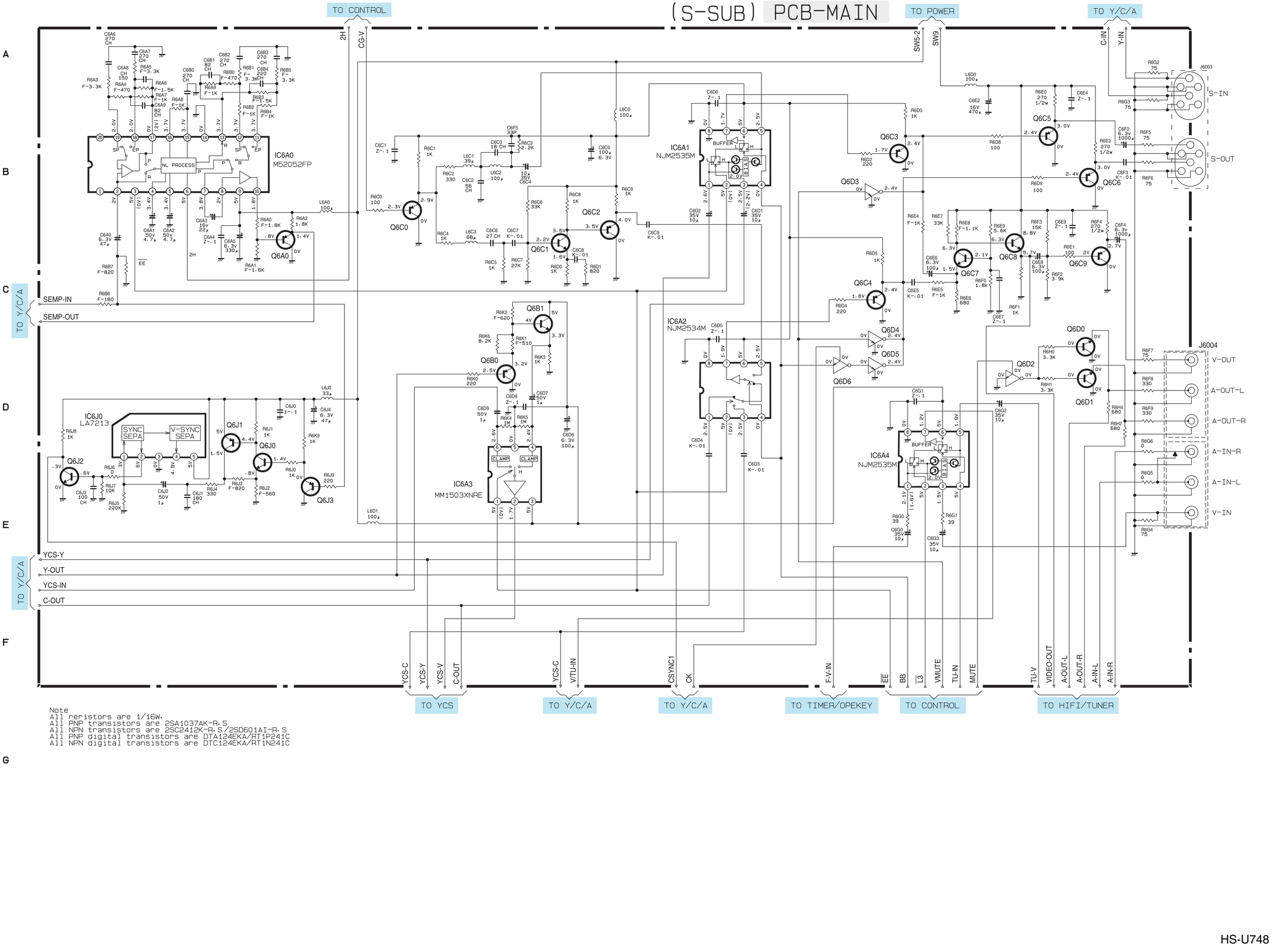
All registors are 1/16W unless otherwise specified.

All diodes are 1SS254 unless otherwise specified.

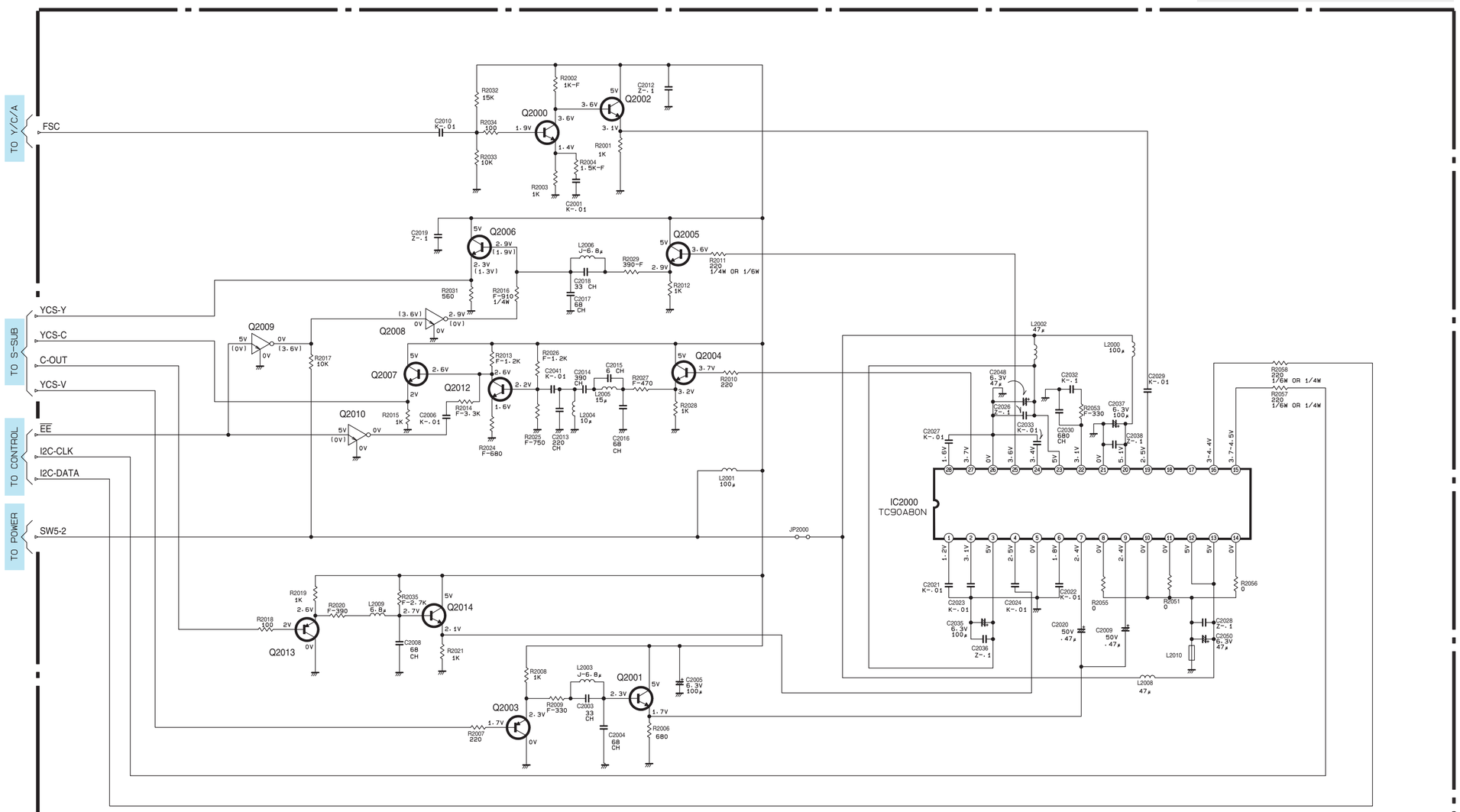
IC8A0 PT6958



(S-SUB) PCB-MAIN

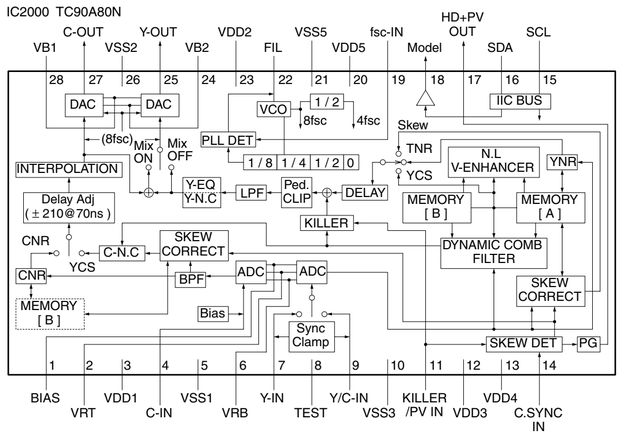


Note
All resistors are 1/16W.
All PNP transistors are 2SA1037AK-R.S
All NPN transistors are 2SC2412K-R.S/2SD601AI-R.S
All PNP digital transistors are DTA124EKA/RT1P241C
All NPN digital transistors are DTC124EKA/RT1N241C

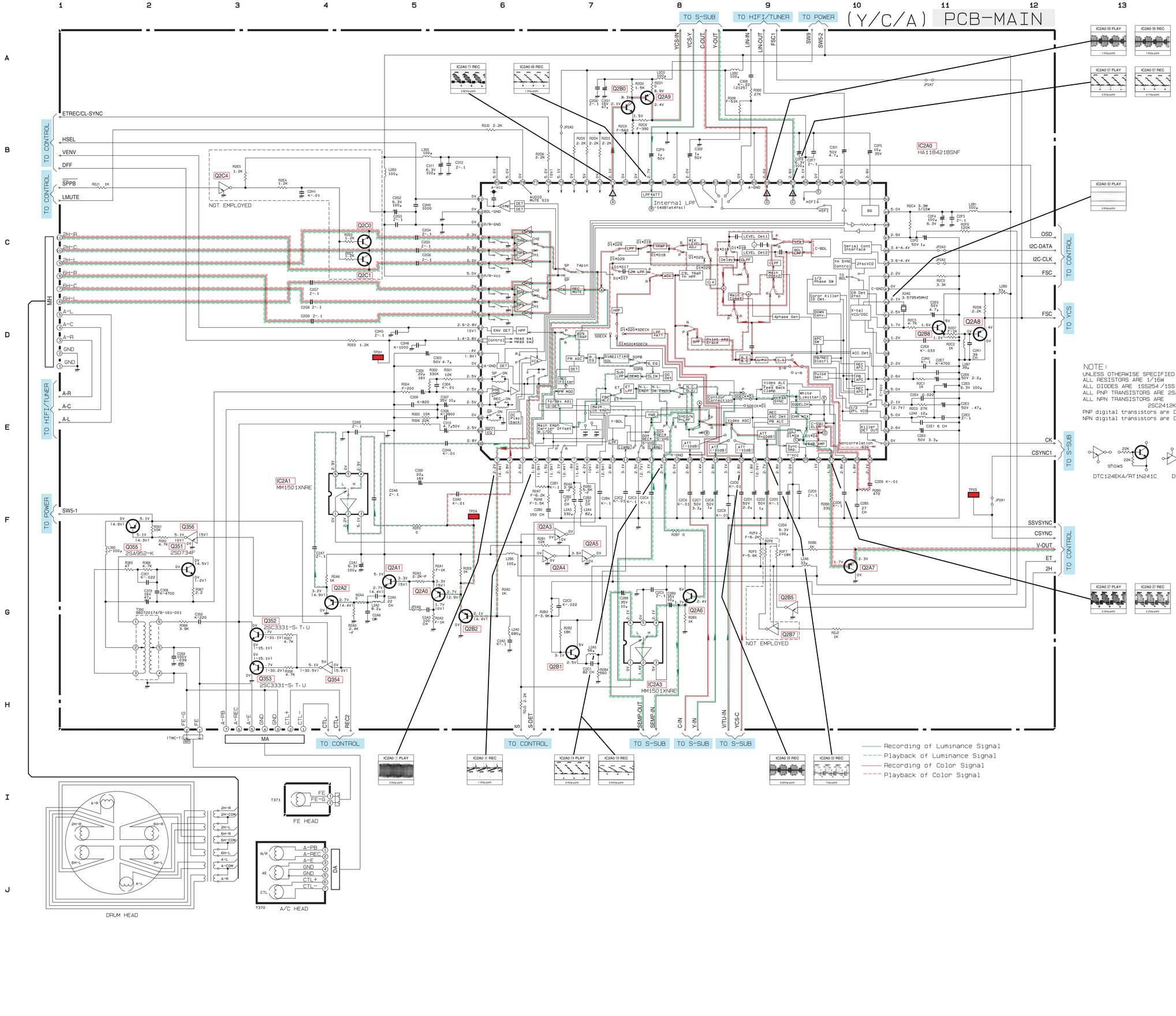


Note : Unless otherwise specified
All PNP transistors are 2SA1037AK-R,S
All NPN transistors are 2SC2412K-R,S/2SD601AI-R,S
All PNP digital transistors are DTA124EKA/RT1P241C
All NPN digital transistors are DTC124EKA/RT1N241C
All diodes are 1SS254/1SS133
All resistors are 1/16W

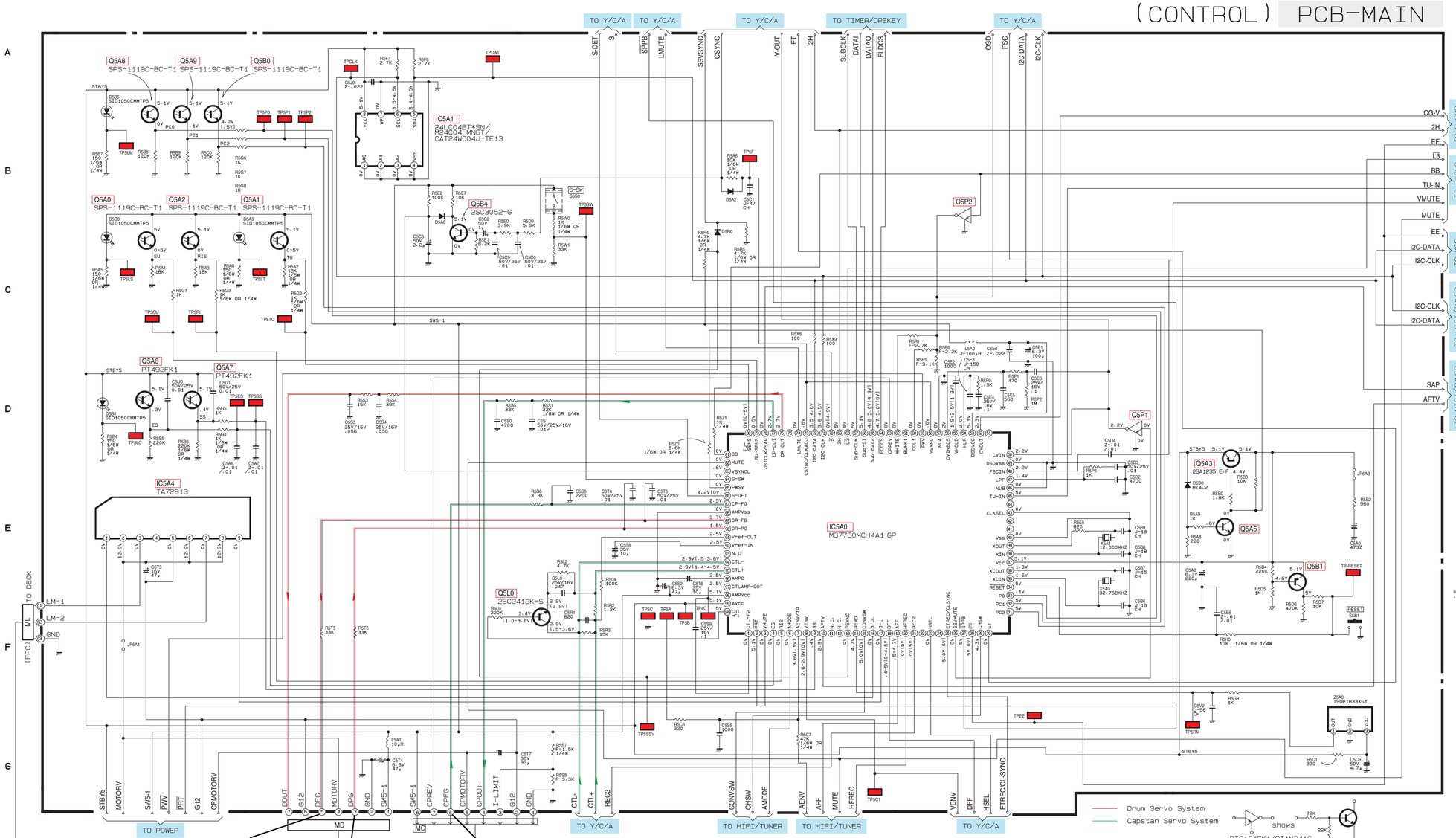
IC2000 TC90A80N



(Y/C/A) PCB-MAIN

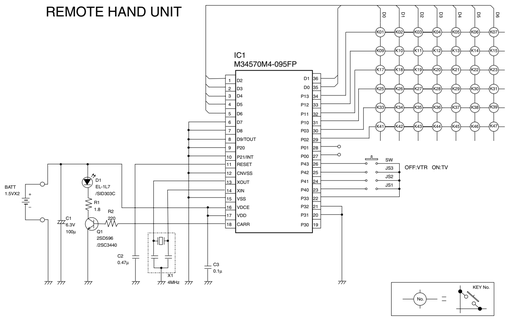

TO S-SUB
TO HIFI/TUNER
TO POWER
YCS-IN
YCS-V
C-OUT
Y-OUT
LIN-IN
LIN-OUT
FSC1
SW9
SW5-2
ETREC/CL-SYNC
HSEL
VENV
DFF
SPPB
LMUTE
TO CONTROL
2H-R
2H-C
2H-L
6H-R
6H-C
6H-L
A-L
A-C
A-R
GND
GND
MH
A-R
A-C
A-L
TO HIFI/TUNER
SW5-1
TO POWER
IC2A0 PLAY
IC2A0 REC
IC2A1
MM1501XNRE
IC2A3
MM1501XNRE
IC2A0
HA11B421BSNF
Internal LPF
NOT EMPLOYED
NOT EMPLOYED
OSD
I2C-DATA
I2C-CLK
FSC
FSC
TO CONTROL
TO YCS
CK
CSYNC1
TO S-SUB
SSVSYNC
CSYNC
V-OUT
ET
2H
TO CONTROL
NOTE:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS ARE 1/16W
ALL DIODES ARE 1SS254 /1SS133
ALL PNP TRANSISTORS ARE 2SA1037AK-R,S
ALL NPN TRANSISTORS ARE
2SC2412K-R,S/2SD601AI-R,S
PNP digital transistors are DTA124EKA/RT1P241C
NPN digital transistors are DTC124EKA/RT1N241C
shows
DTC124EKA/RT1N241C
shows
DTA124EKA/RT1P241C
Q356
2SA952-K
Q355
2SD734F
Q351
Q352
2SC3331-S,T,U
Q353
2SC3331-S,T,U
Q354
Q2A0
Q2A1
Q2A2
Q2A3
Q2A4
Q2A5
Q2A6
Q2A7
Q2A8
Q2A9
Q2B0
Q2B1
Q2B2
Q2B4
Q2B5
Q2B7
Q2B8
Q2C0
Q2C1
Q2C4
T350
960720174/B-161-001
T370
A/C HEAD
T371
FE HEAD
DRUM HEAD
MA
TO CONTROL
TO CONTROL
TO S-SUB
TO S-SUB
TO S-SUB
Recording of Luminance Signal
Playback of Luminance Signal
Recording of Color Signal
Playback of Color Signal

(CONTROL) PCB-MAIN



NOTE:
All registors are 1/16W unless otherwise specified.
All diodes are 1SS254/1SS133 unless otherwise specified.
All NPN transistors are 2SC2412K-R,S/2SD601A1-R,S unless otherwise specified.
All PNP transistors are 2SA1037AK-R,S unless otherwise specified.
All PNP digital transistors are DTA124EKA/RT1P241C
All NPN digital transistors are DTC124EKA/RT1N241C

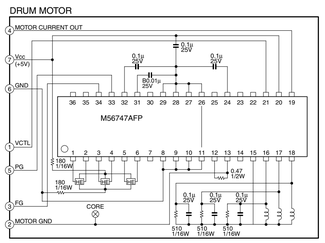
REMOTE HAND UNIT



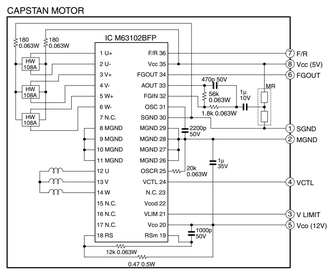
KEY NO.	FUNCTION
K01	VCR POWER
K02	EJECT
K03	CH ∧
K04	CH ∨
K05	VOL ∨
K06	VOL ∧
K07	TV POWER
K08	
K09	1
K10	4
K11	5
K12	2
K13	6
K14	3
K15	MUTE
K16	
K17	7
K18	QUICK PROGRAM
K19	PLAY
K20	8
K21	10
K22	9
K23	INPUT
K24	

KEY NO.	FUNCTION
K25	REC
K26	REW
K27	PAUSE
K28	STOP
K29	DISPLAY
K30	FF
K31	X2
K32	
K33	AUDIO/VIDEO
K34	CANCEL ◀◀
K35	INDEX –
K36	ADJ +
K37	INDEX +
K38	ENTER ▶▶
K39	MENU
K40	
K41	VCR/TV
K42	
K43	
K44	ADJ –
K45	
K46	
K47	SP/EP
K48	

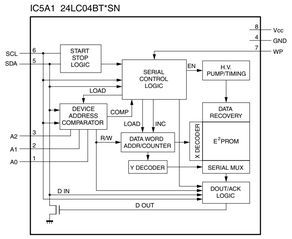
DRUM MOTOR



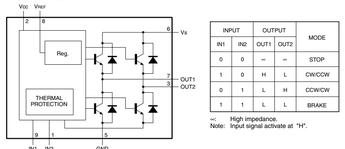
CAPSTAN MOTOR



IC5A1 24LC04BT*SN



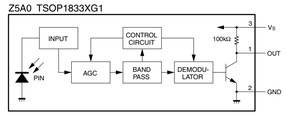
IC5A4 TA7291S



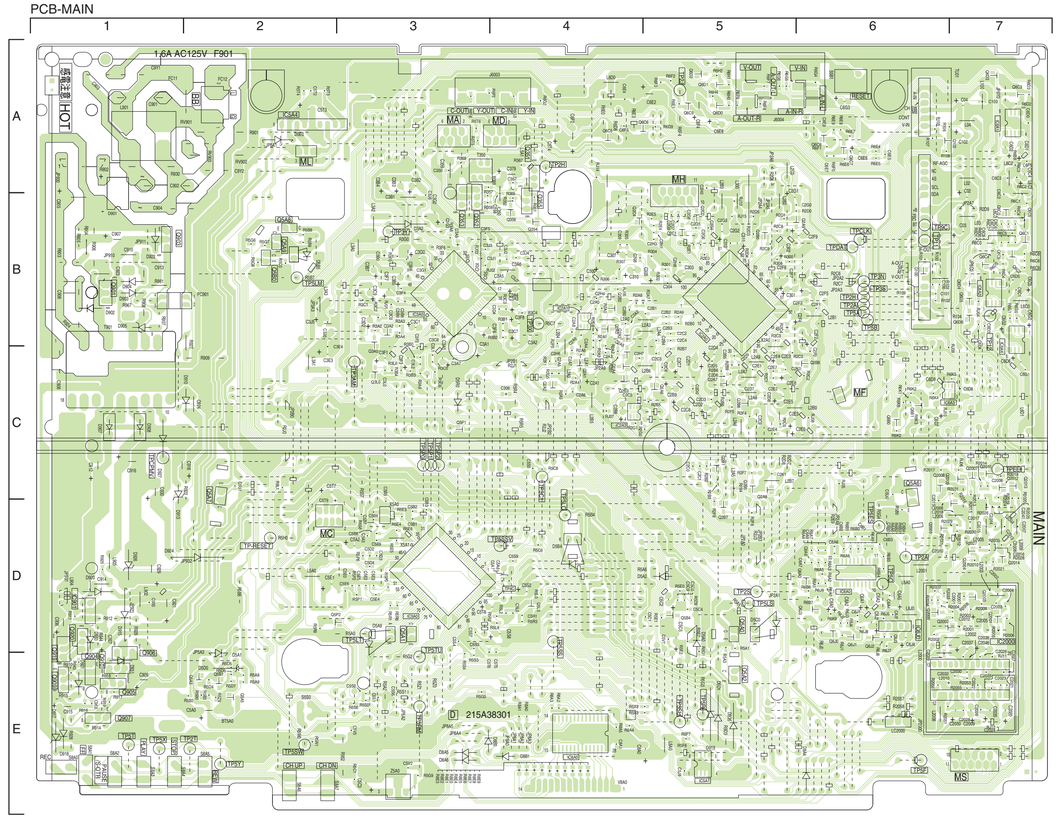
INPUT		OUTPUT		MODE
IN1	IN2	OUT1	OUT2	
0	0	–	–	STOP
1	0	H	L	CW/CCW
0	1	L	H	CCW/CW
1	1	L	L	BRAKE

–: High impedance.
Note: Input signal activate at "H".

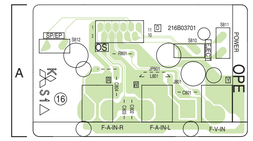
Z5A0 TSOP1833XG1



PCB-MAIN



PCB-OPE



PCB-MAIN

SYMBOL NO.	ADDRESS
BB	A – 2
BT5A0	E – 2
C02	B – 7
C03	B – 7
C04	A – 7
C100	B – 6
C101	B – 6
C102	A – 7
C103	A – 7
C2001	D – 6
C2002	D – 7
C2003	D – 7
C2004	D – 7
C2005	D – 7
C2006	C – 7
C2007	D – 7
C2008	D – 7
C2009	E – 7
C2010	D – 6
C2012	D – 7
C2013	D – 7
C2014	D – 7
C2015	D – 7
C2016	D – 7
C2017	D – 7
C2018	D – 7
C2019	D – 6
C2020	E – 7
C2021	E – 7
C2022	E – 7
C2023	E – 7
C2024	E – 7
C2026	E – 7
C2027	E – 7
C2028	E – 7
C2029	E – 6
C2030	E – 7
C2032	E – 7
C2033	E – 7
C2035	E – 7
C2036	E – 7
C2037	D – 7
C2038	E – 7
C2041	D – 7
C2048	D – 7
C2050	E – 7
C2A0	B – 4
C2A1	C – 4
C2A2	B – 4
C2A3	C – 4
C2A4	C – 4
C2A5	C – 4
C2A6	C – 4
C2A7	C – 4
C2A8	B – 4
C2A9	B – 4
C2B0	B – 4
C2B1	B – 5
C2B2	B – 5
C2B3	B – 5
C2B4	B – 5
C2B5	C – 5
C2B8	C – 4
C2B9	C – 5
C2C0	C – 5
C2C1	C – 5
C2C2	B – 5
C2C3	C – 5
C2C4	B – 5
C2C5	C – 4
C2C6	C – 5
C2C7	C – 5
C2C8	C – 5
C2C9	C – 5
C2D0	C – 5
C2D1	C – 5
C2D2	C – 5
C2D3	C – 5
C2D4	C – 5
C2D5	C – 5
C2D6	C – 5
C2D7	C – 5
C2D8	C – 5
C2D9	C – 5
C2E0	C – 6
C2E1	C – 5
C2E2	C – 5
C2E3	C – 5
C2E4	C – 5
C2E5	C – 5
C2E6	C – 5
C2E7	C – 5
C2E8	C – 5
C2E9	C – 5
C2F0	C – 6
C2F1	B – 6
C2F2	B – 6
C2F3	B – 6
C2F4	B – 5
C2F5	B – 6
C2F7	B – 5
C2F8	B – 5
C2F9	B – 5
C2G0	B – 5
C2G1	B – 5
C2G2	B – 5
C2G3	B – 5
C2G4	B – 5
C2G5	B – 5
C2G6	B – 5
C2G7	B – 5
C2G8	B – 5
C2G9	B – 5
C2H0	A – 5
C2H1	B – 5
C2H3	B – 5
C2H4	B – 4
C2H6	C – 4
C2H7	C – 4
C2H8	B – 5
C2K0	C – 5
C2K1	C – 5
C300	B – 4
C301	B – 5
C302	B – 5
C303	B – 5
C304	B – 5
C305	B – 5
C306	C – 4
C307	B – 4
C308	B – 4
C309	B – 4
C310	B – 4
C311	B – 5
C312	B – 5
C350	A – 3
C357	A – 4
C358	B – 4
C359	A – 3
C379	A – 4
C3A0	C – 3
C3A1	C – 3
C3A2	B – 4
C3A3	B – 4
C3A4	B – 4
C3A5	B – 4
C3A6	B – 4
C3A7	C – 3
C3A9	B – 3
C3B0	B – 3
C3B1	B – 3
C3B2	A – 3
C3B3	A – 3
C3B4	A – 3
C3B5	B – 3
C3B6	B – 3
C3B7	B – 3
C3B8	B – 3
C3B9	B – 3
C3C0	B – 3
C3C1	B – 3
C3C7	B – 4
C3C8	B – 3
C3C9	B – 3
C3D2	B – 3
C3D4	B – 4
C3E3	C – 2
C3E4	C – 2
C3F1	C – 3
C3F2	C – 3
C3F3	C – 3
C3F4	B – 3
C3F5	B – 3
C3F6	B – 3
C3F7	B – 3
C3F8	B – 4
C3G0	B – 3
C3G1	B – 3
C3G2	B – 3
C3G3	B – 3
C3J0	B – 2
C3J1	B – 3
C3J2	B – 4
C3J3	B – 3
C3J4	B – 4
C3J5	B – 2
C3J6	B – 3
C3J7	B – 4
C3L0	C – 3
C3L1	C – 3
C3L2	C – 3
C5A0	E – 2
C5A2	D – 3
C5A3	D – 3
C5A6	D – 4
C5A7	D – 4
C5B1	D – 3
C5B2	D – 3
C5B3	D – 3
C5B5	D – 3
C5B6	D – 3
C5B7	D – 3
C5B8	D – 3
C5B9	D – 3
C5C0	D – 5
C5C1	D – 5
C5C2	D – 5
C5C3	E – 3
C5C4	D – 5
C5C5	D – 5
C5C9	D – 5
C5D2	D – 3
C5D3	D – 3
C5D4	D – 3
C5E0	D – 3
C5E1	D – 2
C5E2	D – 3
C5E3	D – 3
C5E4	D – 3
C5E5	D – 3
C5E6	D – 3
C5J9	E – 5
C5L0	D – 4
C5R1	D – 4
C5S0	E – 3
C5S1	E – 3
C5S2	D – 4
C5S3	D – 3
C5S4	D – 3
C5S5	C – 4
C5S6	E – 3
C5S7	D – 3
C5S8	D – 4
C5S9	D – 4
C5T2	A – 2
C5T3	A – 2
C5T4	A – 4
C5T5	E – 4
C5T6	E – 3
C5T7	C – 2
C5T8	D – 3
C5T9	D – 2
C5U0	C – 6
C5U1	C – 2
C5V2	E – 3
C5V5	E – 3
C5V7	D – 5
C6A0	D – 6
C6A1	D – 6
C6A2	D – 6
C6A3	D – 6
C6A4	D – 6
C6A5	D – 6
C6A6	D – 6
C6A7	D – 6
C6A8	D – 6
C6A9	D – 6
C6B0	D – 6
C6B1	D – 6
C6B2	D – 6
C6B3	D – 6
C6B4	D – 6
C6C0	B – 7
C6C1	B – 7
C6C2	B – 7
C6C3	A – 7
C6C4	A – 7
C6C5	B – 7
C6C6	B – 7
C6C7	B – 7
C6C8	B – 7
C6C9	B – 7
C6D0	A – 7
C6D1	A – 7
C6D2	A – 7
C6D3	B – 7
C6D4	B – 7
C6D5	B – 7
C6D6	C – 7
C6D7	C – 6
C6D8	C – 7
C6D9	C – 6
C6E2	A – 4
C6E4	A – 4
C6E5	A – 6
C6E6	A – 6
C6E7	A – 6
C6E8	A – 5
C6E9	A – 6
C6F2	A – 4
C6F3	A – 4
C6F4	A – 5
C6F5	A – 7
C6G0	B – 7
C6G1	C – 7
C6G2	B – 7
C6G3	A – 6
C6J0	D – 6
C6J1	D – 6
C6J2	D – 6
C6J3	D – 6
C6J4	D – 6
C8A0	E – 5
C8A1	E – 4
C901	A – 1
C902	A – 2
C903	A – 1
C904	B – 2
C905	B – 1
C906	B – 1
C907	B – 1
C908	C – 1
C910	B – 1
C912	C – 1
C913	B – 1
C914	D – 1
C915	E – 1
C916	C – 1
C918	C – 1
C921	D – 1
C923	B – 1
C924	C – 2
C926	E – 1
C927	D – 1
C929	D – 1
C930	D – 1
C935	D – 1
C936	D – 1
C952	E – 1
C9Y1	A – 1
C9Y2	A – 2
D3A2	B – 3
D5A0	D – 5
D5A1	E – 2
D5A2	D – 5
D5A9	D – 3
D5B4	D – 4
D5B5	B – 2
D5C0	D – 5
D5D0	E – 2
D5E0	A – 2
D5R0	C – 3
D8A4	E – 6
D8A5	E – 3
D8A6	E – 3
D8B0	E – 3
D8B1	E – 4
D901	B – 1
D902	B – 1
D903	B – 1
D904	B – 1
D905	B – 1
D907	C – 1
D908	C – 1
D910	C – 2
D913	D – 1
D915	D – 1
D917	E – 1
D918	E – 1
D919	E – 5
D920	D – 1
D921	E – 1
D922	B – 1
D924	D – 2
D926	D – 1
D927	C – 1
D931	E – 1
D933	D – 1
D935	E – 5
D9D1	E – 5
FC11	A – 1
FC12	A – 2
IC2000	E – 7
IC2A0	B – 5
IC2A1	B – 4
IC2A3	C – 4
IC3A0	B – 3
IC5A0	D – 3
IC5A1	E – 5
IC5A4	A – 3
IC6A0	D – 6
IC6A1	A – 7
IC6A2	B – 7
IC6A3	C – 6
IC6A4	B – 7
IC6J0	D – 6
IC8A0	E – 4
IC901	D – 1
J6003	A – 4
J6004	A – 5
JP2000	E – 6
JP2A0	D – 5
JP2A1	D – 5
JP2A2	B – 6
JP2A3	B – 6
JP2A4	B – 5
JP2A5	B – 5
JP2A6	A – 5
JP2A7	B – 7
JP2A8	D – 6
JP2A9	C – 4
JP2B0	C – 2
JP2B1	C – 4
JP2B2	C – 4
JP2B3	D – 5
JP3A3	B – 2
JP5A1	A – 2
JP5A2	E – 3
JP5A3	E – 2
JP6C0	B – 7
JP6Y0	A – 7
JP8A0	E – 4
JP8A1	E – 4
JP8A2	E – 4
JP8A3	E – 4
JP8A4	E – 3
JP8A5	E – 3
JP910	B – 1
JP911	B – 1
JP921	D – 1
JP930	A – 1
JP931	D – 1
JP932	D – 1
L02	A – 7
L03	B – 7
L04	A – 7
L100	A – 7
L2000	E – 6
L2001	D – 6
L2002	D – 7
L2003	D – 7
L2004	D – 7
L2005	D – 7
L2006	D – 7
L2008	E – 6
L2009	D – 7
L2010	E – 6
L2A0	B – 4
L2A1	C – 4
L2A2	C – 4
L2A3	B – 4
L2A4	B – 4
L2A5	C – 5
L2A6	C – 5
L2A7	C – 5
L2A8	C – 5
L2A9	C – 5
L2B0	C – 6
L2B1	B – 6
L2B2	B – 5
L2B3	B – 5
L2B4	C – 4
L2B5	C – 4
L2B6	C – 4
L2B7	C – 5
L2C0	A – 5
L300	B – 5
L350	B – 4
L3A0	B – 3
L3A1	C – 2
L3A2	B – 3
L3A3	B – 2
L4A0	D – 6
L6C0	B – 7
L6C1	B – 7
L6C2	A – 7
L6C3	B – 7
L6D0	A – 4
L6D1	C – 7
L6J0	D – 6
L8A0	E – 5
L901	A – 1
L902	D – 1
L903	D – 1
L904	D – 1
LC2000	E – 6
MA	A – 3
MC	D – 2
MD	A – 4
MF	C – 6
MH	A – 5
ML	A – 2
MS	E – 7
PC901	B – 2
Q100	B – 6
Q102	A – 6
Q2000	D – 6
Q2001	D – 7
Q2002	D – 6
Q2003	D – 7
Q2004	D – 7
Q2005	D – 6
Q2006	D – 7
Q2007	C – 7
Q2008	C – 6
Q2009	C – 7
Q2010	C – 7
Q2012	C – 7
Q2013	C – 7
Q2014	D – 7
Q2A0	B – 4
Q2A1	C – 4
Q2A2	C – 4
Q2A3	B – 4
Q2A4	C – 4
Q2A5	C – 4
Q2A6	C – 5
Q2A7	C – 5
Q2A8	C – 5
Q2A9	B – 5
Q2B0	B – 5
Q2B1	C – 5
Q2B2	B – 4
Q2B3	C – 4
Q2B5	C – 5
Q2B6	C – 5
Q2B7	D – 5
Q2B8	C – 6
Q2C0	B – 5
Q2C1	B – 5
Q2C4	B – 4
Q2C5	B – 4
Q352	A – 3
Q353	A – 3
Q354	B – 4
Q355	B – 4
Q356	B – 4
Q3A0	B – 3
Q3A2	B – 3
Q3L0	C – 3
Q5A0	D – 5
Q5A1	D – 3
Q5A2	E – 5
Q5A3	E – 2
Q5A5	E – 2
Q5A6	C – 6
Q5A7	C – 2
Q5A8	B – 2
Q5A9	B – 2
Q5B0	B – 2
Q5B1	E – 2
Q5B4	D – 5
Q5L0	D – 4
Q5P1	C – 3
Q5P2	D – 2
Q6A0	D – 6
Q6B0	C – 6
Q6B1	C – 6
Q6C0	B – 7
Q6C1	B – 7
Q6C2	B – 7
Q6C3	A – 7
Q6C4	B – 7
Q6C5	A – 4
Q6C6	A – 4
Q6C7	A – 6
Q6C8	A – 6
Q6C9	A – 5
Q6D0	A – 5
Q6D1	A – 5
Q6D2	A – 5
Q6D3	A – 7
Q6D4	B – 7
Q6D5	B – 7
Q6D6	B – 7
Q6J0	D – 6
Q6J1	D – 6
Q6J2	D – 6
Q6J3	D – 6
Q901	B – 1
Q903	B – 1
Q904	E – 1
Q905	E – 1
Q906	E – 1
Q907	E – 1
Q909	E – 1
Q910	E – 1
Q919	D – 1
Q920	D – 1
R100	B – 6
R101	B – 6
R102	B – 6
R103	B – 6
R104	B – 7
R105	A – 6
R106	A – 6
R107	A – 6
R108	A – 6
R109	B – 6
R2001	D – 7
R2002	D – 6
R2003	D – 7
R2004	D – 6
R2005	D – 7
R2006	D – 7
R2007	D – 7
R2008	D – 7
R2009	D – 7
R2010	D – 7
R2011	D – 7
R2012	D – 7
R2013	C – 7
R2014	C – 7
R2015	C – 7
R2016	D – 7
R2017	C – 6
R2018	C – 7
R2019	C – 7
R2020	C – 7
R2021	D – 7
R2024	C – 7
R2025	D – 7
R2026	C – 7
R2027	D – 7
R2028	D – 7
R2029	D – 7
R2030	D – 7
R2031	C – 7
R2032	D – 6
R2033	D – 6
R2034	D – 6
R2035	D – 7
R2051	E – 6
R2053	E – 7
R2055	E – 7
R2056	E – 6
R2057	E – 6
R2058	E – 6
R2A0	B – 4
R2A1	B – 4
R2A2	C – 4
R2A3	C – 4
R2A4	C – 4
R2A5	C – 4
R2A6	C – 4
R2A7	B – 4
R2A8	B – 4
R2A9	B – 5
R2B0	B – 5
R2B1	C – 4
R2B2	C – 5
R2B3	C – 5
R2B4	C – 5
R2B5	C – 5
R2B6	C – 5
R2B7	C – 5
R2B8	C – 5
R2B9	C – 5
R2C0	C – 5
R2C1	C – 5
R2C2	C – 6
R2C3	B – 5
R2C4	B – 5
R2C5	C – 5
R2C6	B – 6
R2C7	B – 6
R2C8	B – 5
R2C9	B – 5
R2D0	B – 5
R2D1	B – 5
R2D3	B – 5
R2D4	B – 5
R2D5	B – 5
R2D6	A – 5
R2E0	B – 5
R2E1	B – 5
R2E4	B – 5
R2E5	B – 5
R2E8	B – 4
R2E9	D – 6
R2F0	B – 4
R2F1	C – 4
R2F4	C – 5
R2F5	C – 5
R2F7	C – 5
R2F8	D – 5
R2F9	D – 5
R2G0	C – 5
R2G1	C – 4
R2G5	C – 4
R2J0	C – 2
R2J1	C – 4
R2J2	C – 4
R2J3	D – 5
R300	B – 5
R301	B – 5
R302	B – 5
R304	B – 5
R305	B – 4
R306	B – 4
R307	B – 4
R308	B – 5
R351	B – 4
R352	B – 4
R357	B – 3
R358	B – 3
R365	A – 3
R366	A – 4
R367	A – 4
R368	A – 3
R3A2	B – 3
R3A3	B – 3
R3A4	B – 3
R3A8	B – 3
R3A9	C – 3
R3B0	C – 3
R3B1	B – 4
R3B2	B – 4
R3B3	C – 3
R3B4	C – 3
R3C1	B – 3
R3C2	B – 3
R3C3	B – 4
R3C4	B – 4
R3C5	C – 3
R3C6	C – 3
R3F0	B – 3
R3F6	B – 3
R3G0	B – 3
R3L0	C – 3
R5A0	D – 3
R5A1	D – 5
R5A2	E – 3
R5A3	D – 5
R5A5	D – 5
R5A6	D – 5
R5A8	E – 2
R5A9	E – 2
R5B0	E – 2
R5B2	E – 2
R5B3	E – 2
R5B4	D – 4
R5B5	D – 6
R5B6	D – 2
R5B7	B – 2
R5B8	B – 2
R5B9	B – 2
R5C0	B – 2
R5C1	E – 3
R5C6	D – 4
R5C7	B – 4
R5C8	C – 4
R5D4	E – 2
R5D5	E – 2
R5D6	E – 2
R5D7	E – 2
R5D9	D – 5
R5E0	D – 5
R5E1	D – 5
R5E2	D – 5
R5E3	D – 3
R5E4	D – 3
R5E5	D – 3
R5E6	D – 3
R5E7	D – 5
R5F7	E – 5
R5F8	E – 5
R5G1	D – 5
R5G2	E – 3
R5G3	E – 5
R5G4	D – 6
R5G5	E – 3
R5G6	B – 2
R5G7	B – 2
R5G8	B – 2
R5G9	E – 3
R5H0	D – 2
R5L0	D – 4
R5L2	D – 4
R5L4	D – 4
R5P0	D – 3
R5P1	D – 3
R5P2	D – 3
R5P6	D – 3
R5R1	D – 3
R5R2	D – 4
R5R3	D – 4
R5R4	C – 4
R5R5	C – 4
R5R6	D – 3
R5R9	D – 2
R5S0	E – 3
R5S1	E – 3
R5S3	E – 3
R5S4	E – 3
R5S6	E – 3
R5S7	D – 3
R5S8	D – 3
R5T3	A – 2
R5T4	A – 2
R5T5	A – 3
R5T6	A – 3
R5W0	E – 2
R5W1	E – 2
R5X8	E – 5
R5X9	E – 5
R5Z0	E – 3
R5Z1	E – 3
R5Z8	E – 2
R6A0	D – 6
R6A1	D – 6
R6A2	D – 6
R6A3	D – 6
R6A4	D – 6
R6A5	D – 6
R6A6	D – 6
R6A7	D – 6
R6A8	D – 6
R6A9	D – 6
R6B0	D – 6
R6B1	D – 6
R6B4	D – 6
R6B5	D – 6
R6B6	D – 6
R6B7	D – 6
R6B8	A – 7
R6C0	B – 7
R6C1	B – 7
R6C2	B – 7
R6C3	A – 7
R6C4	B – 7
R6C5	B – 7
R6C6	B – 7
R6C8	B – 7
R6D0	B – 7
R6D1	B – 7
R6D2	A – 7
R6D3	A – 7
R6D5	B – 7
R6D6	B – 7
R6E0	A – 4
R6E1	A – 5
R6E3	A – 4
R6E4	A – 6
R6E5	A – 6
R6E6	A – 6
R6E7	A – 6
R6E8	A – 6
R6E9	A – 6
R6F0	A – 6
R6F1	A – 6
R6F2	A – 5
R6F3	A – 5
R6F4	A – 5
R6F5	A – 3
R6F6	A – 3
R6F7	A – 5
R6F8	A – 5
R6F9	A – 5
R6G0	B – 7
R6G1	B – 7
R6G2	A – 4
R6G3	A – 4
R6G4	A – 6
R6G5	A – 5
R6G6	A – 5
R6H0	A – 5
R6H1	A – 5
R6H2	A – 5
R6H4	A – 5
R6J0	D – 6
R6J1	D – 6
R6J2	D – 6
R6J3	D – 6
R6J4	D – 6
R6J5	D – 6
R6J6	D – 6
R6J7	D – 6
R6J8	D – 6
R6J9	D – 6
R6K0	C – 6
R6K1	C – 6
R6K2	C – 6
R6K3	C – 6
R6K4	C – 6
R6K5	C – 7
R6K6	C – 6
R6K9	D – 6
R8A0	E – 4
R8A1	E – 4
R8A2	E – 4
R8A3	E – 4
R8A4	E – 4
R8A5	E – 4
R8E0	E – 4
R8E1	E – 4
R8E2	E – 4
R8E3	E – 4
R8E4	E – 4
R8E6	E – 4
R8E7	E – 4
R8E8	E – 4
R8E9	E – 4
R8F9	A – 5
R8S8	B – 1
R901	A – 2
R902	A – 1
R903	B – 1
R904	B – 1
R905	B – 1
R906	B – 1
R907	B – 1
R908	B – 1
R909	C – 2
R910	E – 1
R911	D – 1
R912	D – 1
R914	E – 1
R915	E – 1
R916	E – 1
R917	E – 1
R918	E – 1
R919	E – 1
R922	D – 2
R924	B – 1
R925	D – 1
R926	D – 1
R927	C – 2
R928	E – 1
R930	A – 1
R943	E – 1
R944	D – 1
R952	E – 3
R967	B – 1
R981	B – 1
R9D3	E – 5
R9L1	C – 2
RJ10	C – 6
RJ11	E – 7
RJ12	E – 7
RJ13	B – 5
RJ14	A – 4
RJ15	B – 5
RJ16	B – 4
RV901	A – 2
RV902	A – 2
RV903	A – 2
S5B1	A – 6
S5S0	E – 2
S8A0	E – 1
S8A1	E – 1
S8A2	E – 1
S8A3	E – 1
S8A4	E – 1
S8A5	E – 2
S8A6	E – 2
S8A7	E – 2
T350	A – 3
T901	C – 1
TP-RESET	D – 2
TP11	B – 6
TP12	B – 7
TP2A	B – 6
TP2H	B – 6
TP2S	D – 5
TP2T	E – 2
TP3AM	C – 3
TP3N	B – 6
TP3S	B – 6
TP3X	B – 4
TP3Y	B – 3
TP4C	D – 4
TP5A	B – 6
TP5B	B – 6
TP5C	D – 6
TP5C1	C – 4
TP5ES	D – 6
TP5F	E – 6
TP5LC	D – 4
TP5LM	B – 2
TP5LS	D – 5
TP5LT	D – 3
TP5P0	C – 3
TP5P1	C – 3
TP5P2	C – 3
TP5RI	E – 5
TP5RM	E – 3
TP5SS	D – 4
TP5SSV	D – 4
TP5SU	E – 5
TP5SW	E – 2
TP5T	E – 1
TP5TU	E – 3
TP5X	E – 1
TP5Y	E – 2
TP9C	B – 6
TPCLK	B – 6
TPDAT	B – 6
TPEE	C – 7
X2A0	C – 5
X5A0	D – 3
X5A1	D – 3
Z5A0	E – 3